

FLIGHT

&
The AIRCRAFT
ENGINEER.

First Aero Weekly in the World.
Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.
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EDITORIAL COMMENT.

"Newspapers are an essential part of our war organisation."
(Sir Auckland Geddes, Minister of National Service.)



N Army Council Instruction has just been issued announcing that the Army Council, in consultation with the Air Ministry and the Ministry of National Service, has approved of the direct admission of suitable lads of cadet units recognised by Territorial Force Associations into the R.A.F., for training as pilots and observers. So far as the details of the scheme are concerned, cadets who wish to join the R.A.F. will, on attaining the age of 17 years and 10 months, apply to their Cadet O.C., who will, if he considers the candidate suitable, send him to the nearest reception depôt of the R.A.F. with a written recommendation. If the candidate is accepted by the O.C. reception depôt and, on subsequently proceeding to the cadet distribution depôt, passes the medical board, he will be attested and

enlisted forthwith into the Royal Air Force. Officers commanding cadet units are to be guided by the following considerations before recommending the lad:—

(a) The candidate must be 17 years 10 months of age at the time of volunteering. (b) He must be, as far as the Cadet C.O. can judge, approximately of Grade I. in medical category, but an anatomical defect such as slight lameness need not debar a candidate from his C.O.'s recommendation. (c) He must be known to the C.O. as an intelligent, well-conducted lad, sufficiently well educated to ensure the successful reception of technical instruction. (d) He must be fully aware that he is volunteering for service in the R.A.F. as pilot or observer or for such duties as the exigencies of the service may demand. When admitted into the R.A.F. he will be ear-marked as a commissioned or non-commissioned pilot or observer, according to the attainments and qualifications he proves himself to possess. (e) The written consent of his parents or guardians must be supplied to the Cadet C.O.

To our way of thinking the new scheme is an admirable one. For one thing, it should act in encouragement of the younger lads to join the cadet units. Undoubtedly there are very many—probably thousands—of lads who aspire to join the flying service when they are old enough but who see no way in except through the ranks of the Army. Even that is only a chance, since all kinds of obstacles to transfer are likely to impede the course of the young soldier who desires to go over to the air service. The new regulation opens up the road to the R.A.F. very well, and at the same time creates a sort of implied obligation upon the intending candidate to fit himself for his future duties by undergoing a preliminary period of training and discipline in a cadet unit, from which he certainly must benefit considerably, both morally and physically. Further, the cadet units will act as a species of filter for the purpose of selecting between those who are likely to make good flying officers and those whose abilities were better directed into some other service channel and the R.A.F. will thus secure its younger recruits after their special qualifications have been examined, which alone will save a great deal of vexation and disappointment on both sides. The change is one that is all to the good.

"The
Kingdoms
of the
Air."

Under this heading our contemporary *The Field* publishes an exceedingly interesting and well reasoned article on the future of aerial navigation after the war. The article has as its principal theme the absolute necessity that will exist for establishing and maintaining the complete aerial

supremacy of the British Empire. The subject is by no means a new one to the readers of "FLIGHT." It is one upon which we have written many times, and upon which we have brought to bear all the influence that publicity in these columns commands. Nor are our opinions the growth of a day, or even of the period of the war. Long before the dark days of 1914 we, together with the comparatively few who were then able to realise in some measure what the conquest of the air must ultimately mean to the nations of the earth, insisted that the time was not far off when the command of the air would be as vital to the existence of the Empire as our sea supremacy was then and is now. In those days we doubt not that we were held to be—well, let us say, enthusiasts. But a lot of water has run beneath the bridges since then, and it is with no small satisfaction that we now see responsible journals and publicists enunciating views and committing themselves to prophecies that, ten or a dozen years ago, would have at least led their friends to doubt their sanity. This, however, is perhaps only by the way.

As the article in question points out, to us more than to any other nation, aerial power is vital, nor is it to be entirely expressed in terms of war squadrons and fighting machines. These will be essential, but they will be merely complementary to our air-borne commerce, just as our fighting Navy is complementary to the mercantile marine. The fundamental fact that must be grasped before we come to the discussion of the probable influence of air power on history is that the development of aviation has completely changed our status as an island Power. It has not only abolished land frontiers, but under its influence the narrow seas have virtually ceased to exist. That being admitted, it follows that we have almost come down to an equality with the rest of the nations of Europe whose boundaries have hitherto not been so favourably drawn for purposes of defence as our own. We may talk as we like about Leagues of Nations to enforce peace and of an era of universal disarmament, but we still hold to the opinion that until human nature and human aspirations have undergone such a change as it is impossible for us to visualise, the need will continue to exist for preparedness to fight in our defence and that of our friends among the nations. We are not going the whole length and committing ourselves to the prophecy that the wars of the future will be fought entirely in the air and that, therefore, our efforts must in consequence be confined to aerial preparedness. But we will go a long way on the road and say that the nation or group of nations which holds the command of the air will be able to impose its will on the rest of the world. That thesis, we submit, requires no justification. It simply needs assertion in order that it may become fixed in the minds of those who are making a study of aerial development in the future.

When we come to discuss the existing need—or the need that will presently arise—that we should secure and hold the command of the air, we come back to the proposition that such aerial supremacy is but the necessary complement of commercial predominance in the air. In the latter lies the sole justification for the legitimate aspiration for fighting ascendancy, just as the fact that we are the maritime carriers of the world has brought the ad-

mission from others that it was our function by right to police the seas.

The question now is: Do we as a nation, and does the Government itself realise the truth of the proposition and all it implies? In a nebulous way, perhaps yes. But we are afraid the subject is too general, and in a manner too remote, for universal understanding and that the nation as a whole has not yet grasped the concrete facts, let alone the possibilities. True, the nation knows far more about the subject than it did four years ago. Then, an aeroplane in flight was something to bring people to their doors to see a sight that was even then wonderful, while now the same thing scarcely causes them to glance skyward. But it is doubtful if the larger issues are appreciated as they will have to be if we are to secure what we believe to be essential to our continued existence as an Empire. Alternatively, does the Government realise it, and has it made the necessary plans to be put into execution after the war. As we said only a week or two ago, it is undoubted that a certain amount—even a large amount—of State assistance will have to be given to aviation when peace comes again. That is admitted by all who have given the subject any thought. Unfortunately, it is the way of British Governments to wait until they have been given a lead by the country before they actually do anything. No great change is made, no great policy inaugurated, except under the insistent pressure of strong public opinion and in this case it is open to doubt if the necessary pressure is ready to be brought to bear. There is this to be said, however, that the Press of the country is becoming increasingly alive to the needs of the case, and it is through the Press and in that way alone that the necessary volume of public opinion can be created and kept alive. In justice to the present Government it is to be said that it is doing a great deal with regard to the future. How much, and what shape its efforts are taking, we could not say if we knew it all—which we confess we do not. Many of the problems that will have to be confronted are realised and preparations made for dealing with them. But there is no reason to suppose that the full magnitude of the task that lies before us is as yet fully grasped and it is thus for those who guide public opinion—the Press of the country—to assist in the work of strengthening the hands of the Government, and in bringing pressure to bear when needs be in order that we may not once more be left at the post when the race starts in earnest.

The Encourage- ment of Research.

With the assent of the Ministry of Munitions and the approval of the Board of Trade, the British Science Guild is to hold an exhibition shortly of products and appliances of scientific and industrial interest, divided under three heads. These divisions will be (a) products imported chiefly from enemy countries before the war, but now made in this country; (b) products in the manufacture of which we excelled in this country even before the war, and which we exported to enemy countries; and (c) products in the manufacture of which considerable developments have taken place since the war.

The chief purpose of the exhibition is to make clear the undoubted necessity of scientific research with respect to the application of its results in the

arts and industries; and, further, to display to the public and to those intimately concerned how much has been successfully achieved in this regard since the outbreak of the war in the production of articles of the first importance, not only for the home but also for the foreign markets, hitherto manufactured in or imported from other countries. The promoters of the exhibition believe—and we entirely agree with their point of view—that such an exhibition, held at the present time, is likely to have a most stimulating effect upon scientific and industrial research and upon manufactures, and that the highest interests of the nation will thus be promoted.

Of special interest from our own standpoint are the sections devoted to electrical and electro-magnetic appliances and measuring and mechanical instruments, including materials and appliances used in aircraft and their manufacture. There is a special committee charged with looking after the aircraft section, including Lieut.-Col. Bagnall Wild, Lieut.-Col. Mervyn O'Gorman, and Major Willock, so that the interests are in good hands. We certainly congratulate the British Science Guild on their decision to hold such an exhibition as this, which we doubt not will be productive of much good to science and industry. It is to be held at King's College, and is to be open for four weeks commencing on the 12th inst.

The Great Dope Monopoly.

The country is beginning by now to become used to revelations of sheer incompetence on the part of the great spending departments of the Government which are entrusted with the carrying on of the war. Of these departments the Ministry of Munitions is by a long way the worst. Making every allowance for the enormously rapid growth of the Ministry and the consequent expansion of the staff at a correspondingly rapid rate, which was bound in the nature of things to result in the appointment of a certain percentage of incompetents, the lapses of this mushroom department can only be described as appalling. The periodic reports of the Select Committee on National Expenditure appear to be taking on an aspect of a series of adverse comments on the way the Ministry of Munitions carries on its work and transactions. It does not keep its accounts in any sort of intelligible manner. It has cultivated the habit of paying its debts twice, and even thrice over. It allows trifles like three or so millions of pounds to disappear off the face of the earth, and is unable to say how or where the money has gone. Really, we thought that the fourth report of the Select Committee had exhausted the chronicle of the Ministry's misdeeds, but the fifth and latest lays bare what appears to be a scandal of the first magnitude.

In another part of this issue of "FLIGHT" we print the whole of the report in so far as it relates to what is likely to become known as the "Great Dope Monopoly." It is a long and temperately worded document, but anything more damning of the hopeless ineptitude of a Government department it would be difficult to imagine. To trace the story briefly, it appears from the Report that at the beginning of the war it was discovered—which everybody associated with the aircraft industry knew—that cellulose acetate, which is an essential ingredient in the manufacture of "dope," was not made in England. It was manufactured in Germany, in

France at the Usines du Rhone, and in Switzerland by the Cellonite Co., at Basle. Private manufacturers in this country, in spite of every obstacle placed officially in their way, obtained it from these two latter sources, but the War Office does not appear to have obtained it from the Usines du Rhone until late in 1915, after which date the reports uniformly show that the product of these works was regarded as superior in quality to the Cellonite product.

Early in 1915 enquiries were made by the War Office regarding the possibility of manufacturing cellulose acetate in England. After preliminary negotiations with several companies, tender forms were issued to three firms in July, 1915, for 100 tons of this product to be manufactured in England. Of the three companies invited, the Cellonite Co. was the only one to tender. No tender was issued to the Cellon Co. of London, which was in touch with the Usines du Rhone and other French experts, although they had been in communication with the War Office and had put its views before that department regarding the superiority of the du Rhone product, which they were themselves using for dope. The result was that the Cellonite Co. of Basle submitted a tender in which they undertook to manufacture in England within six months. The tender was accepted and the representative of the Swiss Company, Dr. Dreyfus, at once raised the question of the effect on his undertaking of the excess profits tax, and asked for some assurance that it would not be applied to the new venture. Not to pursue the complicated negotiations which followed along their whole length, incredible as it may appear to those who have been up against the iniquitous inequalities and anomalies of the excess profits tax, it may be said at once that an arrangement was agreed to by the Treasury whereby the company was to receive by way of a subsidy, year by year for five years, a sum equal to the difference between the income tax they would pay and the income tax that would have been payable by them if they had been charged with tax on the debenture interest paid and dividends distributed. The final effect of this arrangement was set forth in a letter from the War Office to the company, in which the former guaranteed to refund to the company the capital expenditure incurred during the war upon the establishment of the plant for the manufacture of cellulose acetate and allied chemical products up to a maximum equivalent to the excess profits duty actually charged in respect of each year's working during a period of five years from the formation of the company, on condition that reasonable prices were quoted for all orders, that orders during the war should only be taken from the Government directly or indirectly, and that after the war Government orders should receive priority. And an excellent arrangement, too, from the company's point of view!

In the meantime the Cellon Co. and the United Alkali Co. offered to erect factories in England, the latter in particular receiving a certain amount of backing from the Admiralty, but neither was "encouraged to go on" and fell out of the running. The Admiralty, says the report, were anxious to widen the sources of supply, partly in order to secure competition in manufacture and partly owing to dissatisfaction with the cellulose acetate which was being imported from the parent firm at Basle. The influences at work within the War Office, whatever

they were, seem to have been sufficiently strong to block the progressive tendencies of the Admiralty. All this time no cellulose acetate was being produced in this country. As a matter of fact, although the original tender of the Cellonite Co. was for manufacture in England within six months, which would mean production in January, 1916, it was actually not until April, 1917, that any supplies were manufactured and not until the following July that supplies were forthcoming in quantities.

Somewhere about this latter time the Department of Aeronautical Supplies at the Ministry of Munitions took over responsibility for the new company, which was then about to embark on a capital expenditure of some £3,000,000, and no later than last month the Ministry cancelled the original financial agreement, undertook to make loans on account of capital expenditure and placed contracts with the company to the extent of some three millions sterling. Further than this, the Ministry took what appears to be the extreme step of prohibiting the import of cellulose acetate by other companies who were under contract to supply it, and refused all offers made by others to manufacture it in England. This amounts to presenting the British Cellulose Co., which is the child of the Basle concern, with a complete monopoly of the manufacture of cellulose acetate, a monopoly which has not the saving grace of a monopoly that it shall be able to supply the needs of the State.

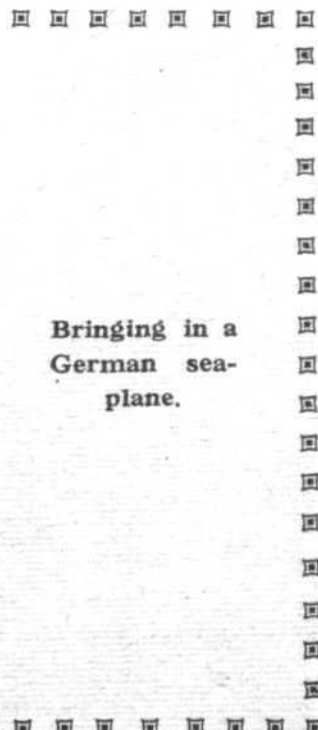
We have not followed the financial history of the company through its many and varied phases. These are so many and involved that we have not the space to spare to them. Moreover, they will be found set forth in the report appearing elsewhere. The Committee has withheld comment on the existing financial arrangements pending their complete settlement, and we feel that we can do no better than follow their example in the meantime. There is, however, no doubt of one thing, which is that those who are responsible for the shocking transactions which are laid bare by the report should be dealt with as they deserve. We do not impute blame for the moment to the company for making the best terms it could with the War Office and later with the Ministry

of Munitions, especially as the company claims that the latter had no idea of evidence being given alleging irregularities against itself, and asks for a suspension of judgment in the meantime. The position of the company as regards the allegations made against its formation and administration is not quite the point at issue for the moment. That can be left until the Company's case in rebuttal has been heard. So far, however, as the share of the Departments is concerned, the matter most certainly cannot be left where it is. The men who have been responsible for the scandal, however highly placed they may be, must be made known and the strictest judicial enquiry into the whole of the circumstances made. We do not intend to make any insinuations or innuendoes, but there is something about the whole thing that does not look at all well, and in the interests of public morality it should be probed to the bottom. More than that we do not intend to say for the present, save that we await the presentation of the case for the company with more than ordinary interest.

With reference to the final recommendation of the Committee that the Ministry of Munitions should take over the works and business of the company we confess we view the suggestion with alarm. Is the intention to create *another* huge State trading monopoly? Is it another move in the direction of nationalisation of industry? Surely, the single proposition before the Government is that it requires certain essential products for the making of munitions of war and that these products should be purchasable in the best market—which is certainly not a huge Government trading concern. In this particular matter it is disclosed by the Report of the Select Committee itself that there are other firms in the field who are not only willing but able to enter into competition for supplying the needs of the State and who have already expressed their willingness to erect plants and manufacture cellulose acetate at a much more economical rate than the company which is the subject of that report. Why, then, simply transfer a pernicious private monopoly to the State with the inevitable consequence of high prices indefinitely for an inferior product?



Bringing in a
German sea-
plane.



HONOURS

Honours for Flying Officers.

It was announced in a Supplement to the *London Gazette* on July 23rd that His Majesty the King has been graciously pleased to approve of the following awards to the under-mentioned Officers and Warrant Officers, in recognition of their gallantry and devotion to duty in the Field:—

Bar to the D.S.O.

T. Capt. ROY MAXWELL DRUMMOND, D.S.O., M.C., R.F.C.—For conspicuous gallantry and devotion to duty. He attacked single-handed a formation of six enemy scouts, and brought down one, which was wrecked on striking the ground. He was then attacked by the remainder, and succeeded in bringing down one out of control before he himself, owing to engine trouble, was forced to land. He got the engine going again, and though stopped by engine trouble on four occasions, he managed to get back to his own lines, thus evading his pursuers. His performance was a gallant and successful one. (D.S.O. gazetted March 26th, 1918.)

T. Lieut. (T. Maj.) CHARLES FREDERICK ALGERNON PORTAL, D.S.O., R.E., Spec. Res., and R.A.F.—For conspicuous gallantry and devotion to duty. During a period of four months, chiefly under adverse weather conditions, he repeatedly carried out successful raids, by day and night, his ingenuity and daring enabling him to drop many tons of bombs on important enemy posts. One night he crossed the lines five times, only landing between each flight to replenish with bombs. Another day he took on single-handed five enemy machines, and drove down three of them—a most gallant and splendid feat. On another day, despite thick mist, he registered one of our batteries on an enemy battery, causing the destruction of one pit and obtaining one fire and two explosions; and another day, flying for 5½ hours, he carried out two very successful counter-battery shoots, observing 350 rounds. He has always set a most magnificent example to the squadron under his command. (D.S.O. gazetted July 18th, 1917.)

Awarded the D.S.O.

T. Lieut. JOHN EDWARD GEORGE MOSBY, R.A.F.—For conspicuous gallantry and devotion to duty whilst on an artillery patrol. He was attacked by the enemy machines, two from the front and one from the rear. He engaged and drove off the latter but was hit in the abdomen, and when he turned to engage the others his pilot was hit and instantly killed. Although his machine fell out of control from 3,000 ft. to 1,000 ft. he continued to engage them, and was again hit in the abdomen. But he succeeded in driving them off, and though his machine again became out of control he righted it and safely landed it at his aerodrome. He showed indomitable pluck, both during an unequal contest, and in determining to land his machine without injury, although nearly unconscious from loss of blood.

Lieut. (T. Capt.) DONALD FASKERN STEVENSON, M.C., Yeo. and R.A.F.—For conspicuous gallantry and devotion to duty when carrying out low-flying reconnaissances and contact patrols, under very heavy machine-gun, rifle and anti-aircraft fire. In his patrols, often lasting many hours, and in bad weather conditions, he attacked enemy infantry, transport and batteries from a low level, using his machine-gun and dropping bombs, frequently returning with his machine riddled with bullets, and the information he obtained was quite invaluable. His cheerful spirit, consistent dash and fearlessness, and his magnificent work have set a splendid example to all in his squadron, and greatly encouraged them at a time when the casualties in it were extremely heavy.

Awarded a Second Bar to the Military Cross.

Lieut. (T. Capt.) GEORGE EDWARD HENRY McELROY, M.C., R.G.A. and R.F.C.—For conspicuous gallantry and devotion to duty. While flying at a height of 2,000 ft., he observed a patrol of five enemy aircraft patrolling behind the lines. After climbing into the clouds, he dived to the attack, shot down and crashed one of them. Later, observing a two-seater, he engaged and shot it down out of control. On another occasion he shot down an enemy scout which was attacking our positions with machine-gun fire. He has carried out most enterprising work in attacking enemy troops and transport and in the course of a month has shot down six enemy aircraft, which were seen to crash and five others out of control. (M.C. gazetted March 26th, 1918.) (1st Bar gazetted April 22nd, 1918.)

Awarded a Bar to the Military Cross.

Lieut. (T. Capt.) JOHN GILMOUR, M.C., A. and S. Highrs. and R.A.F.—For conspicuous gallantry and devotion to duty

when engaging hostile aircraft. Within a week he crashed to the ground four enemy machines, and at all times, when on patrol, he never hesitated to attack any enemy in sight. His consistent dash and great fearlessness have been worthy of the highest praise. In all he has ten hostile machines to his credit. (M.C. gazetted May 26th, 1917.)

Capt. ARTHUR WILLOUGHBY FALLS GLENNY, M.C., A.S.C., attd. R.A.F.—For conspicuous gallantry and devotion to duty, both in reconnaissance and as an artillery observer. On one occasion, although shot down, he brought in valuable information. On several occasions, he conducted successful knock-out shoots with various batteries, obtained excellent photographs, and did much work of a very high standard. (M.C. gazetted September 17th, 1917.)

T. Lieut. ARTHUR WILLIAM HAMMOND, M.C., R.E., and R.F.C.—For conspicuous gallantry and devotion to duty in aerial fighting. Whilst attacking hostile troops at about 500 ft., he was encountered by eight triplanes, which dived from all directions, firing their front guns. He fired bursts at each machine in turn, shooting three of them down out of control. He was wounded himself six times, but continued the action until his machine caught fire. The pilot, although wounded five times, with great skill and coolness, managed to climb to the left hand bottom plane and controlled the machine from the side of the fuselage, side-slipping to the ground. The machine crashed in "No-Man's Land," and the pilot managed to extricate him from the flames and dragged him to a shell-hole, from which they were rescued by the infantry. (M.C. gazetted April 22nd, 1918.)

T. Sec. Lieut. LIONEL CONRAD HOOTON, M.C., Gen. List and R.A.F.—For conspicuous gallantry and devotion to duty. When flying at 1,000 ft. his petrol tank was shot through and immediately afterwards his left aileron control shot away. He tried to turn his machine without success, and it was side-slipping down out of control into the enemy's lines. Realising the danger, his observer climbed out on the right wing, enabling him to turn and land just within our lines. It was owing to his extraordinary coolness that he was able to land the machine in safety. He has also done fine work on reconnaissance and in attacking enemy infantry. (M.C. gazetted June 22nd, 1918.)

T. Capt. ARTHUR HICKS PECK, D.S.O., M.C., R.F.C.—For conspicuous gallantry and devotion to duty. While patrolling at a height of 14,000 ft., he observed a formation of five enemy aircraft attempting a reconnaissance. He attacked the top machine, a scout, and drove it down out of control. He then attacked the second scout, which he also drove down out of control. He finally attacked a two-seater, and so quickly that he got to close quarters and opened fire with both guns. That, too, he sent down out of control. His performance was a splendid one, besides being costly for the enemy. (M.C. gazetted January 18th, 1918.)

Lieut. (T. Capt.) EDMOND ROBERT HARRIS POLLAK, M.C., R.A.F.—For conspicuous gallantry and devotion to duty in reconnaissance work and during a flight lasting three and a half hours. Throughout, he scarcely flew at a height greater than 200 ft.; he attacked enemy infantry and dropped messages on our batteries which enabled them to shoot with good effect on the enemy as they advanced; he also shot down one machine out of control. On return to the aerodrome it was found that his own machine was riddled with bullets. (M.C. gazetted, April 22nd, 1918.)

T. Capt. JOHN HENRY TUDHOPE, M.C., R.A.F.—For conspicuous gallantry and devotion to duty in fighting with exceptional dash and skill over a period of nine months, when he carried out numerous reconnaissances, flying low and engaging with bombs and machine-gun fire enemy troops, guns and transport. He obtained many direct hits and inflicted heavy casualties, often flying under very difficult weather conditions. He has crashed three enemy aeroplanes and shot down two others out of control. His determination and courage have been a brilliant example to the pilots of the flight he has been leading. (M.C. gazetted March 26th, 1918.)

Awarded the Military Cross.

Lieut. JOHN WAKELING BAKER, R.G.A. and R.A.F.—For conspicuous gallantry and devotion to duty in carrying out low-flying reconnaissances and contact patrols under heavy machine-gun, rifle and anti-aircraft fire, when he remained in the air for long hours, often under abnormally bad weather conditions and often in darkness or thick mist. On one occasion he fired into enemy troops and transport, causing great confusion, and remained over their lines taking notes until quite dark, when he returned with his machine riddled

with bullets. On every flight he obtained most important information, which was dropped at headquarters, and throughout the period his work has been magnificent.

Sec. Lieut. HARRY WALDO COLLIER, R.A.F., Spec. Res.—For conspicuous gallantry and devotion to duty. During recent operations this officer carried out a contact patrol in a thick mist at a height of only 150 ft. under heavy machine-gun and rifle fire, and flew daily during the misty weather at low altitudes bringing back much useful information of the enemy, and harassing them with machine-gun fire and bombs. It was greatly due to his magnificent work that headquarters were kept informed of the enemy's movement during the different phases of the battle. By his gallant and cheerful spirit at a time when the squadron was suffering heavy casualties, he set a splendid example to the others.

T. Lieut. DOUGLAS GRAHAM COOKE, R.A.F.—For conspicuous gallantry and devotion to duty when engaged in many low bombing patrols and low reconnaissances. On one occasion, when important information was required, he flew along a front of 10 miles at 100 ft., being subjected the whole way to heavy fire from the ground, and on the same day along another front of 12 miles at 300 ft., each time returning with the information and his machine much shot about. He has destroyed several hostile machines in air combats, and has invariably displayed the highest courage and a splendid fighting spirit.

T. Capt. GEORGE MONTAGUE COX, Gen. List and R.A.F.—For conspicuous gallantry and devotion to duty. On numerous occasions during recent operations he has descended to very low altitudes, and has attacked with bombs and machine-gun fire enemy troops forming up for attack. Thanks to his dash and intrepidity hostile bodies of troops have suffered very severe casualties and have been scattered in all directions. He has in all destroyed four hostile machines, and has at all times displayed the greatest gallantry.

Lieut. HENRY GEORGE CROWE, Royal Irish Regiment and R.A.F.—For conspicuous gallantry and devotion to duty when taking part in many low-flying bomb raids and reconnaissances as an observer. On every occasion he brought back very accurate and valuable information. On three occasions his machine was shot down by enemy fire, but he continued his work, and his great fearlessness and fine spirit have been an invaluable example to others. He has taken part in several air combats and been responsible for the destruction of many hostile machines.

T. Sec. Lieut. HECTOR DANIEL, Gen. List and R.A.F.—For conspicuous gallantry and devotion to duty in numerous aerial encounters. On one occasion he completely destroyed three enemy aeroplanes on the same day. He has in addition crashed three others and sent down two out of control. He has always displayed the greatest skill, keenness and courage in aerial fighting, and his services have been of inestimable value to his patrol leader.

Temp. Lieut. DOUGLAS MONTGOMERY DENING, R.A.F.—For conspicuous gallantry and devotion to duty. With a party of men, five of whom had already been wounded, he repeatedly returned to a balloon position, which was being heavily shelled, to save stores and supervise the removal of the balloon. Owing to the roads being under heavy fire he was unable to effect his purpose until the following day, when he went up again, although subjected to heavy fire, and succeeded in getting the balloon and other stores safely away.

Sec. Lieut. FRANK CECIL FARRINGTON, R.A. and R.A.F.—For conspicuous gallantry and devotion to duty. On several occasions during heavy hostile attacks he has sent down calls to the artillery to engage hostile infantry forming up for attack. Thanks to his skill in discovering enemy formations, and to his speed in communicating the requisite information to the artillery, the most severe casualties were inflicted on the enemy, the failure of their attacks being largely due to his splendid work. On numerous other occasions his work has proved of exceptional value, and he has at all times set a magnificent example to all ranks of his squadron.

T. Sec. Lieut. ERIC MORTIMER FORSYTH, R.A.F.—For conspicuous gallantry and devotion to duty. He has on many occasions displayed the utmost courage and fearlessness in bombing enemy troops, and engaging them with machine-gun fire from low altitudes, and in bombing huts and lorries. On one occasion he was sent out to do a special reconnaissance, and flying at a particularly low altitude, and in very bad weather, he successfully obtained the most valuable information.

Lieut. (T. Capt.) ROBERT ARTHUR GROSVENOR, Dragoon Guards and R.A.F.—For conspicuous gallantry and devotion to duty as a leader of offensive patrols against hostile aircraft and troops on the ground. On one occasion his patrol was attacked from the rear by five enemy scouts. By skilful piloting he manœuvred his machine into position behind

one of the scouts, which he shot down in flames. He was attacked again, and drove the scout to destruction. On other occasions he has destroyed and driven down out of control at least eight hostile machines.

T. Lieut. ALFRED RELF GURNEY, M.M.G.C., attd. R.F.C.—For conspicuous gallantry and devotion to duty. While attacking enemy troops his pilot was wounded and fainted. He connected up the dual control, but the machine was falling in a spin. However, he got control again at a height of only 500 ft., and got the machine with its occupants safely back. He showed great pluck and determination.

Lieut. (T. Capt.) HERBERT JAMES HAMILTON, D. of Corn. L.I., attd. R.A.F.—For conspicuous gallantry and devotion to duty. He has on many occasions displayed the utmost dash and fearlessness in engaging enemy aircraft at close range, and has succeeded in destroying a considerable number. He also attacked with machine-gun fire, and from low altitudes, enemy formations on the ground, and dropped bombs on points of importance behind the hostile lines. He has invariably shown great determination and a fine offensive spirit.

Sec. Lieut. LEONARD FRANCIS HANDFORD, Lond. R., attd. R.A.F.—For conspicuous gallantry and devotion to duty. On one occasion, when on patrol, the machine in which he was acting as observer, was attacked from below by four hostile scouts. After he had fired twenty rounds into the nearest scout, the latter burst into flames and crashed in our lines. Despite the fact that he was wounded, and that his gun mounting was put out of action, he continued to fire the remainder of the drum into another hostile scout, which went down out of control, and is confirmed to have crashed in the enemy lines. The destruction of these two hostile machines was in a great degree due to his gallantry and determination in carrying on with his task under circumstances of great difficulty and danger.

T. Lieut. RAMUND GEORGE HART, R.A.F.—For conspicuous gallantry and devotion to duty. On one occasion, when on patrol, his machine, of which he was the pilot, was attacked from below by four hostile scouts. Though he himself was wounded, and his machine seriously damaged by the first burst of fire from the enemy machines, he contrived to manœuvre his machine so skilfully that his observer was able to send down in flames the nearest hostile scout and to drive down out of control a second enemy machine. Despite the fact that one enemy plane continued to attack him, he succeeded in landing his machine. The destruction of the two hostile machines was in a great degree due to his gallantry and determination in manœuvring his machine when almost out of control.

Lieut. JAMES ALEXANDER GORDON HASLAM, R.A., attd. R.A.F.—For conspicuous gallantry and devotion to duty. While on patrol he, with another officer, observed 15 motor lorries. As these could not be engaged by our artillery by zone call, these officers flew 8,000 yards over the enemy lines, at a height of 3,800 ft., in the face of strong opposition from the ground, and dropped four bombs, obtaining direct hits on the lorries and doing considerable damage to their personnel. They then proceeded to attack them with machine-gun fire as they sought cover. A fortnight later they carried out, at a height of 150 ft., a reconnaissance of their corps front, on which an attack was expected. Despite the fact that the clouds were at 200 ft., and there was a thick mist, they obtained most valuable information. During this flight they directed and located the fire of our artillery on a concentration of enemy infantry. Throughout the operations their work in co-operation with our artillery was always of the greatest value, and their enterprise in attacking enemy troops and transport with bombs and machine-gun fire was splendid.

T. Sec. Lieut. GEORGE SEARLE LOMAX HAYWARD, R.W. Kent R., attd. R.F.C.—For conspicuous gallantry and devotion to duty. On three separate occasions when engaged with large hostile formations, he has attacked and sent crashing to earth two hostile machines on each occasion. He has displayed consistent skill, courage and determination in dealing with hostile aircraft.

T. Sec. Lieut. WILLIAM IVOR EMMS LANE, Gen. List, attd. R.A.F.—For conspicuous gallantry and devotion to duty. While on artillery patrol, he was attacked by nine hostile triplanes. He at once opened fire, and shot down one, which fell in the enemy lines. Although seriously wounded in the leg, he continued with the greatest gallantry to engage the enemy, shooting down a second scout, which fell in our lines. Throughout the fight he displayed exceptional skill in handling his machine, and a magnificent determination to get at close quarters with his opponents.

T. Sec. Lieut. ANTHONY LEACH, British West India Regt., attd. R.A.F.—For conspicuous gallantry and devotion to

duty. As an observer, whilst engaged on photographic work, he was attacked by five hostile triplanes. After he had fired a burst of thirty rounds at a range of 100 yards, one of the enemy planes went down in flames. Though the remaining hostile planes were reinforced by another ten machines, and though he himself was wounded, he fired a drum at a range of 150 yards which resulted in another of the enemy machines rolling over on its side and falling to pieces. By his skill and coolness he undoubtedly saved his pilot and the machine.

T. Lieut. ALAN LOMAX, R.F.A., attd. R.A.F.—For conspicuous gallantry and devotion to duty on many occasions in bringing back accurate and detailed reports. He carried out five low reconnaissances over the enemy's lines in thick weather, in which most of the flying had to be done at under 500 ft. On four occasions his machine was badly shot about by machine-gun fire from the ground. He also carried out three offensive patrols, using bombs and machine-gun fire against enemy troops.

T. Sec. Lieut. WILLIAM ELZER MACLEAN, R.A.F.—For conspicuous gallantry and devotion to duty. During recent operations this officer carried out a contact patrol in a thick mist at a height of only 150 ft. under heavy machine-gun and rifle fire, and flew daily during the misty weather at low altitudes, bringing back much useful information about the enemy, and harassing them with machine gun and bombs. It was greatly due to his magnificent work that headquarters were kept informed of the enemy's movements during the different phases of the battle. By his gallant and cheerful spirit at a time when the squadron was suffering heavy casualties he set a splendid example to the others.

T. Sec. Lieut. LAWRENCE WALTER MAWBEY, R.A.F.—For conspicuous gallantry and devotion to duty while engaged on low flying and bombing attacks over the hostile lines, when, on many occasions, he dropped bombs on the enemy personnel, horses, transport, and camps, and engaged enemy troops with his machine gun from very low altitudes. At all times he displayed a fine fighting spirit and a determination to get at close quarters with his opponents which was deserving of the highest praise.

T. Capt. DAVID MACKAY MCGOWN, R.A.F.—For conspicuous gallantry and devotion to duty as a leader of offensive patrols. It is entirely due to his determination and skill that his patrol has destroyed many enemy machines. His consistent keenness, his gallantry, and untiring energy have at all times set a magnificent example to all the pilots and observers in his squadron. He has personally destroyed many hostile machines, never hesitating to attack, and on all occasions displaying a fighting spirit which has earned the admiration of all in contact with him.

Lieut. JOHN EDWIN MIDDLETON, R.A.F.—For conspicuous gallantry and devotion to duty. He has carried out some extremely good contact patrols in thick weather, flying at 200 to 500 ft. He made two flights on one day. On one, his machine was so badly damaged by machine-gun fire that he had to return. On the other, he made a good report of the situation. On several other occasions he made good reports, and also bombed and machine-gunned the enemy.

T. Sec. Lieut. JOSEPH MICHAEL JOHN MOORE, R.A.F., Gen. List.—For conspicuous gallantry and devotion to duty. When on a special reconnaissance, under poor climatic conditions, he flew below the clouds in the face of exceptionally heavy shell and machine-gun fire and completed his task, returning with intelligence of the greatest value. On a previous occasion, while on reconnaissance, he attacked four hostile machines and succeeded in destroying one and sending another down completely out of control. His work throughout has been carried out in a most courageous and dashing manner.

T. Sec. Lieut. JOSIAH LEWIS MORGAN, R.A.F.—For conspicuous gallantry and devotion to duty when carrying out many low-flying and offensive patrols, and engaging enemy troops, transports, &c., with machine gun fire, and inflicting heavy casualties. On many occasions he attacked and destroyed, or drove down out of control, hostile machines, and he invariably displayed a dash and determination worthy of the highest praise.

Lieut. (T. Capt.) TOM OWEN, S. Staff. Regt., attd. R.A.F.—For conspicuous gallantry and devotion to duty. He has carried out many successful low reconnaissances, bringing back good reports. When on artillery patrol, he succeeded in completely disorganising the traffic on a main road, getting direct hits on troops and transport by artillery. On this occasion it is estimated 40 lorries were destroyed. He also attacked enemy troops and transport with bombs and machine guns with success.

Temp. Sec. Lieut. JAMES PHILIP OWEN-HOLDSWORTH, Gen.

List and R.F.C.—For conspicuous gallantry and devotion to duty. During the last six months he has carried out 52 bombing raids on the enemy lines of communication, their aerodromes and their rest billets, often flying in very bad weather. Descending to a low altitude he has obtained several direct hits, both on their hangars and their billets. On several occasions he has returned with his machine riddled with bullets. He has set a fine example of courage and determination.

T. Sec. Lieut. LEONARD ALLAN PAYNE, Gen. List and R.A.F.—For conspicuous gallantry and devotion to duty. Volunteering to proceed on a special reconnaissance under adverse weather conditions, he penetrated for a distance of 9 miles behind the enemy's lines, flying at an altitude of 200 ft., despite the most intense machine-gun and rifle fire. He returned later, his machine riddled with bullets, with the required information. Previous to this he had bombed and engaged with machine-gun fire bodies of hostile infantry with the most effective results. He has destroyed one hostile plane and driven down two others out of control. He has at all times displayed the greatest fearlessness and dash.

T. Sec. Lieut. JAMES JOHN QUINN, R.A.F.—For conspicuous gallantry and devotion to duty. He carried out five low reconnaissances over the enemy's lines, bringing back valuable information, his machine on three occasions being badly shot about by machine-gun fire from the ground. He carried out one offensive patrol and one escort, attacking with bombs and machine-gun fire from a low altitude. On both occasions he was attacked by enemy aeroplane formations, his observer driving one down out of control, and his own machine being much shot about.

T. Lieut. DOUGLAS ALFRED SAVAGE, Gen. List and R.A.F.—For conspicuous gallantry and devotion to duty, especially on the following occasions. When on patrol attacked a formation of enemy aeroplanes, crashing one, while another fell to pieces in the air after a short combat. Attacked an Albatros, which he set on fire, and drove another down out of control. Attacked many ground targets from low altitudes.

Lieut. LEONARD HIGHTON SHORT, Durham Light Infantry, attd. R.A.F.—For conspicuous gallantry and devotion to duty in bringing in many excellent and accurate contact patrol reports, and, owing to adverse weather conditions, having to fly very low. On one occasion his observer was wounded from the ground, and he was attacked by three enemy aeroplanes, but he brought him safely back. On another occasion his observer was wounded when bombing enemy troops from 1,000 ft.

Sec. Lieut. ERIC HENRY STANES, R.A.F.—For conspicuous gallantry and devotion to duty. On one occasion he carried out at an altitude of between 500 and 700 ft., despite hostile machine-gun and rifle fire, a very comprehensive reconnaissance of railways, roads, dumps, and aerodromes behind the enemy's lines, obtaining information of inestimable value. On a later occasion, while on a photographic reconnaissance, being attacked most persistently by hostile aircraft, he repeatedly drove off the enemy machines, and only returned to his aerodrome when he had obtained the photographs required. His courage and determination were of the highest quality, and the services which he has rendered of exceptional merit.

Lieut. LEO JOHN SWEENEY, B.C. Regt., R.A.F.—For conspicuous gallantry and devotion to duty. When leading a bombing raid this officer attacked enemy troops and transport with bombs and machine-gun fire from 500 ft., causing a great many casualties. Although his observer was wounded and his machine badly damaged, he succeeded in landing behind our lines. During two subsequent low flights he caused many casualties, his observer being again wounded and his machine badly damaged.

Lieut. JOHN WILSON WALLWORK, R.A.F.—For conspicuous gallantry and devotion to duty. During recent operations he participated in many offensive low-flying and bombing attacks, and carried them out with great courage and determination. From very low altitudes he bombed enemy troops and transport, inflicting heavy casualties. He caused, while on offensive patrol, more than one enemy machine to crash, and brought down others out of control. He set a magnificent example of courage and skill.

Lieut. FERDINAND MAURICE FELIX WEST, M. Muns. Fus., Spec. Res., and R.A.F.—For conspicuous gallantry and devotion to duty. While on patrol he, with another officer, observed 15 enemy motor lorries. As these could not be engaged by our artillery by zone call, they flew 8,000 yards over the enemy at a height of 3,800 ft. in the face of strong opposition from the ground, and dropped four bombs, obtaining direct hits on the lorries and doing considerable damage to their personnel. They then proceeded to attack them with

machine-gun fire as they sought cover. A fortnight later they carried out, at a height of 150 ft., a reconnaissance of their corps front, on which an attack was expected. Despite the fact that the clouds were at 200 ft., and there was a thick mist, they obtained most valuable information. During this flight they directed and located the fire of our artillery on a concentration of enemy infantry. Throughout the operations their work in co-operation with our artillery was always of the greatest value, and their enterprise in attacking enemy troops and transport with bombs and machine-gun fire was splendid.

Sec. Lieut. ARTHUR GEORGE WILSON, W. York Regt. and R.A.F.—For conspicuous gallantry and devotion to duty, flying under most difficult weather conditions and obtaining, under heavy fire, valuable information, which he embodied in a series of excellent reports. On one occasion, when a smoke screen was put up by the enemy, he flew round and made a close reconnaissance from between 500 to 1,000 ft. under heavy anti-aircraft and machine-gun fire.

Lieut. WILLIAM JAMES ARTHUR DUNCAN, Can. Rly. Troops, seconded R.A.F.—For conspicuous gallantry and devotion to duty. On one occasion he attacked and shot down an enemy plane which had been engaged at firing on our infantry. He then led his patrol over the enemy's lines, dived down to an altitude of 100 ft., and attacked large numbers of hostile infantry with machine-gun fire, causing the utmost panic amongst them and inflicting heavy casualties. His continuous gallantry and initiative have been most conspicuous.

Lieut. THOMAS IRVING FINDLEY, Can. F.A., attd. R.A.F.—For conspicuous gallantry and devotion to duty. On one occasion, under adverse climatic conditions, he carried out, during a flight of three hours at an altitude of 300 ft., a most valuable reconnaissance. During recent operations his work in attacking enemy troops from low altitudes has been of the greatest value, and he has set a splendid example of energy and determination to all ranks of his squadron.

Belgian Honours for R.F.C.

It was announced in a supplement to the *London Gazette* on July 25th, that the King of the Belgians has conferred the following honours for distinguished services rendered during the course of the campaign:—

ORDRE DE LA COURONNE.

Chevalier.

Sec. Lieut. H. G. Little, S. African Heavy Artillery, attd. R.A.F.

Croix de Guerre.

Temp. Sec. Lieut. H. R. Griffin, R.F.C.; Sec. Lieut. H. G. Little, S. African Heavy Artillery, attd. R.A.F.

ORDRE DE LA COURONNE.

Officier.

Capt. (Temp. Lieut.-Col.) A. S. Barratt, M.C., R.F.A. and R.F.C.

Chevalier.

Lieut. P. E. Biggar, Can. A.S.C. and R.F.C.; Capt. (Temp. Maj.) C. H. B. Blount, M.C., R.W. Surrey Regt. and R.F.C.; Temp. Capt. A. E. Illingworth, R.F.C.; Capt. the Hon. E. G. W. T. Knollys, Lond. Regt. and R.F.C. Temp. Sec. Lieut. H. R. Griffin, Gen. List, and R.F.C.

ORDRE DE LEOPOLD II.

Chevalier.

30203 Flight Sergt. P. A. Barrett, R.F.C.; 30212 Flight Sergt. J. Baxter, R.F.C.; 12228 Flight Sergt. J. Edmond, R.F.C.; 3116 Sergt. W. E. Smith, R.F.C.; 1279 Flight Sergt. B. W. Wright, R.F.C.

CROIX-DE-GUERRE.

Capt. (Temp. Lieut.-Col.) A. S. Barratt, M.C., R.A., and R.F.C.; Lieut. P. E. Biggar, Canadian A.S.C. and R.F.C.; Capt. (Temp. Maj.) C. H. B. Blount, M.C., R.W. Surrey Regt. and R.F.C.; Temp. Lieut. C. H. Davies, Gen. List and R.F.C.; Temp. Sec. Lieut. H. Entwistle (Gen. List and R.F.C.); Temp. Lieut. H. O. Hope, Gen. List and R.F.C.; Temp. Capt. A. E. Illingworth, R.F.C.; Capt. the Hon. E. G. W. T. Knollys, Lond. Regt. and R.F.C.; Temp. Capt. G. F. Lines, M.C., Gen. List and R.F.C.; Temp. Capt. W. B. Tisdall, Gen. List and R.F.C.; 99149 2nd Cl. Air-Mech. R. T. Ainsworth, R.F.C.; 30203 Flight Sergt. P. A. Barrett, R.F.C.; 30212 Flight Sergt. J. Baxter, R.F.C.; 15490 Sergt. P. Blackburn, R.F.C.; 12228 Flight-Sergt. J. Edmond, R.F.C.; 13509 1st Cl. Air-Mech. D. French, R.F.C.; 29039 1st Cl. Air-Mech. E. Gomersall, R.F.C.; 27292 1st Cl. Air-Mech. P. James, R.F.C.; 7228 1st Air-Mech. C. H. McCarthy, R.F.C.; 3116 Sergt. W. E. Smith, R.F.C.; 1279 Flight-Sergt. B. W. Wright, R.F.C.



Ministry of Information.

A squadron of scouts on the British Western front in France, where they have been doing first-class work.

THE HALBERSTADT TWO-SEATER.

160 H.P. MERCEDES ENGINE.

SINCE the disappearance from the Western Front of the little single-seater, two-strutter, Halberstadt biplane, which was described in detail in "FLIGHT" of April 5th, 1917, little has been heard of any machines emanating from the Halberstadt Works. Pilots returned from the Front have, however, known of Halberstadt two-seaters appearing on the Western Front, although as far as the general public is concerned the existence of these machines has not been realised. One of these machines has now arrived at the Enemy Aircraft View Rooms, and here, by the courtesy of the authorities, our representatives have been permitted to examine the machine, of which we publish an illustration on page 854. The time at our disposal has not enabled us to do more than make a cursory examination, but later on as time permits we hope to deal with it in more detail.

The Halberstadt two-seater belongs to the C class, or general utility machines, variously employed for reconnaissance, artillery spotting, photography, &c. From a small plate on the machine the year of manufacture is 1917, but the exact date could not be ascertained. This will probably be found later on, when the wings have been stripped, to be stamped on the wing spars. The same plate bore the marking CLII, the exact meaning of which is not clear at the moment, but which evidently indicates some special employment of machines of the general C class. The general arrangement of the Halberstadt is not greatly different from other makes of German machines of the same class, although in minor details some unusual features were noticed.

The body resembles in shape that of the smaller single seater, being of rectangular cross section, surmounted by a curved top, and terminating at the stern in a horizontal knife's edge. Constructionally, however, the two-seater is different, inasmuch as it is covered with three-ply, whereas the single-seater body was of the girder type and covered with fabric.

The internal framework of the body appeared to be of the form usually employed with this construction. In the nose the body terminates in a "spinner" (not shown in the accompanying drawing) and on the whole the body appears

to have a fairly good stream-line form. The engine fitted is a 160 h.p. Mercedes.

The seating accommodation is somewhat unusual in that both gunner and pilot are housed in a common cockpit, separated only by a deep transverse beam forming the back rest for the pilot. The armament consists of two machine guns, one fixed on the starboard side of the engine and operated by the pilot in the usual manner *via* an interrupter gear. The gunner's machine gun is mounted on a gun ring, of somewhat unusual appearance, mounted a considerable distance above the top of the body on a structure of tubes. A wireless set appears to have been fitted, judging from certain brackets in the gunner's cockpit.

The main planes, which were not in place on the machine examined, and which have not, therefore, been included in our drawing of the machine, appeared to be of equal span, but the chord of the lower plane is considerably smaller than that of the top plane. The mounting of the upper plane is somewhat unusual. From the body two struts slope outwards at a considerable angle, to the top plane. The two struts on each side connect the body and the rear top spar, coming to a point on the spar, and apparently being vertical in front view. The *aileron* control is of the type originated by the Nieuport firm, *i.e.*, the leading edge of the *ailerons* is formed by a steel tube, which extends through the wing into the centre section of the top plane, where crank levers are fitted, connected up to the controls by vertical tubes. The latter are indicated in the drawing. The bottom planes are attached to the sides of the body.

The tail plane of the Halberstadt is of symmetrical cross-section, and is built up in two halves, attached on each side of the body. As the balanced rudder is wholly on top of the body, the elevator is in one piece, as shown in the sketch. There is no external bracing of the tail plane.

The undercarriage is of the usual Vee type, with stream-line steel tube struts. The apices of the two Vees are connected by two cross tubes, but no attempt has been made at stream-lining, the axle and the two cross tubes being left fully exposed to the air.

CADETS AND ADMISSION TO THE R.A.F.

IN conjunction with the Ministry of National Service and the Air Council, the Army Council have approved of the direct admittance of suitable lads of Cadet Units recognised by T.F. Associations into the Royal Air Force (Pilots and Observers).

Cadets who are desirous of joining the Royal Air Force (Pilots and Observers) will, on attaining the age of 17 years and 10 months, apply to their Cadet O.C., who, if he considers the candidate suitable, will send him to the nearest Reception Depot of the Royal Air Force with a written recommendation under this A.C.I. If the candidate is accepted by the O.C., Reception Depot, and, on subsequently proceeding to the Cadet Distribution Depot, passes the final Medical Board, he will be attested and enlisted forthwith into the Royal Air Force. Os.C. Cadet Units will be guided by the following considerations before recommending the lad:—

(a) The candidate must be 17 years 10 months of age, at the time of volunteering.

(b) He must be, as far as the Cadet C.O. can judge, approximately of Grade I in Medical Category, but an anatomical defect such as slight lameness need not debar a candidate from his C.O.'s recommendation.

(c) He must be known to the C.O. as an intelligent well-conducted lad, sufficiently well educated to ensure the successful reception of technical instruction.

(d) He must be fully aware that he is volunteering for service in the R.A.F. as Pilot or Observer or for such duties as the exigencies of the service may demand. When admitted into the R.A.F. he will be earmarked as a commissioned or non-commissioned pilot or observer, according to the attainments and qualifications he proves himself to possess.

(e) The written consent of his parents or guardians must be supplied to the Cadet C.O.

If the C.O. is satisfied as to the above requirements, he will hand the lad his written recommendation and the written consent mentioned in paragraph (e), and will direct the lad to apply in writing (enclosing the above) to the nearest Reception Depot, R.A.F.

The O.C. the Reception Depot will then notify the lad by letter as to when he is to proceed to the Depot for examination, enclosing a return warrant for the journey thither if the lad's home is more than five miles distant from the Depot. If the lad is accepted by the O.C., Reception Depot, he will return to his home and await orders, which will follow within a fortnight. If not accepted, he will return home, and await disposal under the Military Service Act, in the usual manner. All enquiries should be addressed to the Secretary (T.V. 2), War Office.

The R.A.F. Reception Depôts are:—

London	..	40, Upper Brook Street, Mayfair, W.1.
Bristol	..	8, Tyndall's Park Road,
Cardiff	..	12, Newport Road.
Birmingham	..	Carlton Chambers, 35, Paradise Street.
Nottingham	..	8, George Street.
Liverpool	..	12, Abercromby Square.
Leeds	..	The Mount, Springfield Mount.
Newcastle-on-Tyne	..	10, Sydenham Terrace, North Rd.
Glasgow	..	9, Somerset Place, Sauchiehall Street.

The New R.A.F. Uniform.

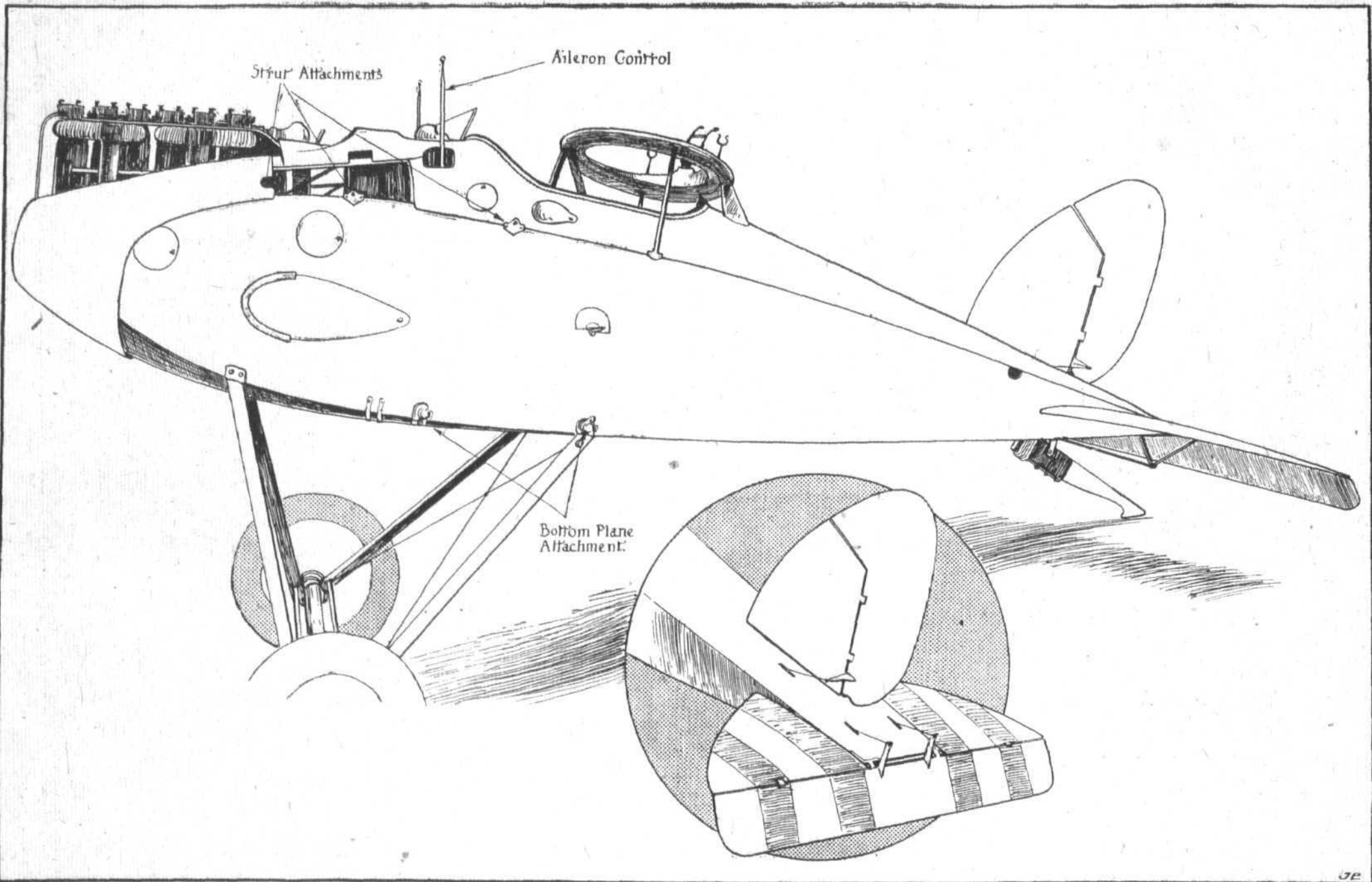
IN view of the fact that the blue material is not generally obtainable at present, it has been decided that officers requiring new uniforms, or urgent renewals, may for the present order R.A.F. khaki, and they will be allowed to wear such uniforms out. In the meantime, as all possible steps are being taken to complete arrangements for control of blue cloth, it is not intended that officers should needlessly provide themselves with new khaki uniforms beyond one suit, which should meet their requirements till the blue cloth is available.

Gift of an Aeroplane Engine.

THE Duke of Bedford, chairman of the Bedfordshire County Council, accepted at Bedford, on July 26th, on behalf of the county, a full-sized aeroplane engine, enclosed in a glass case, the gift of W. H. Allen and Co.

The managing director, in making the presentation, paid a tribute to the work of women workers. He said that after the war their help would be recorded as one of the marvellous things of the century. The King had inspected this engine, and the Ministry of Munitions had consented to the presentation.

THE HALBERSTADT TWO-SEATER.



Perspective drawing of the body of the Halberstadt two-seater biplane, 160 h.p. Mercedes engine. Inset is a sketch of the tail planes.

THE PFALZ SINGLE-SEATER FIGHTER.

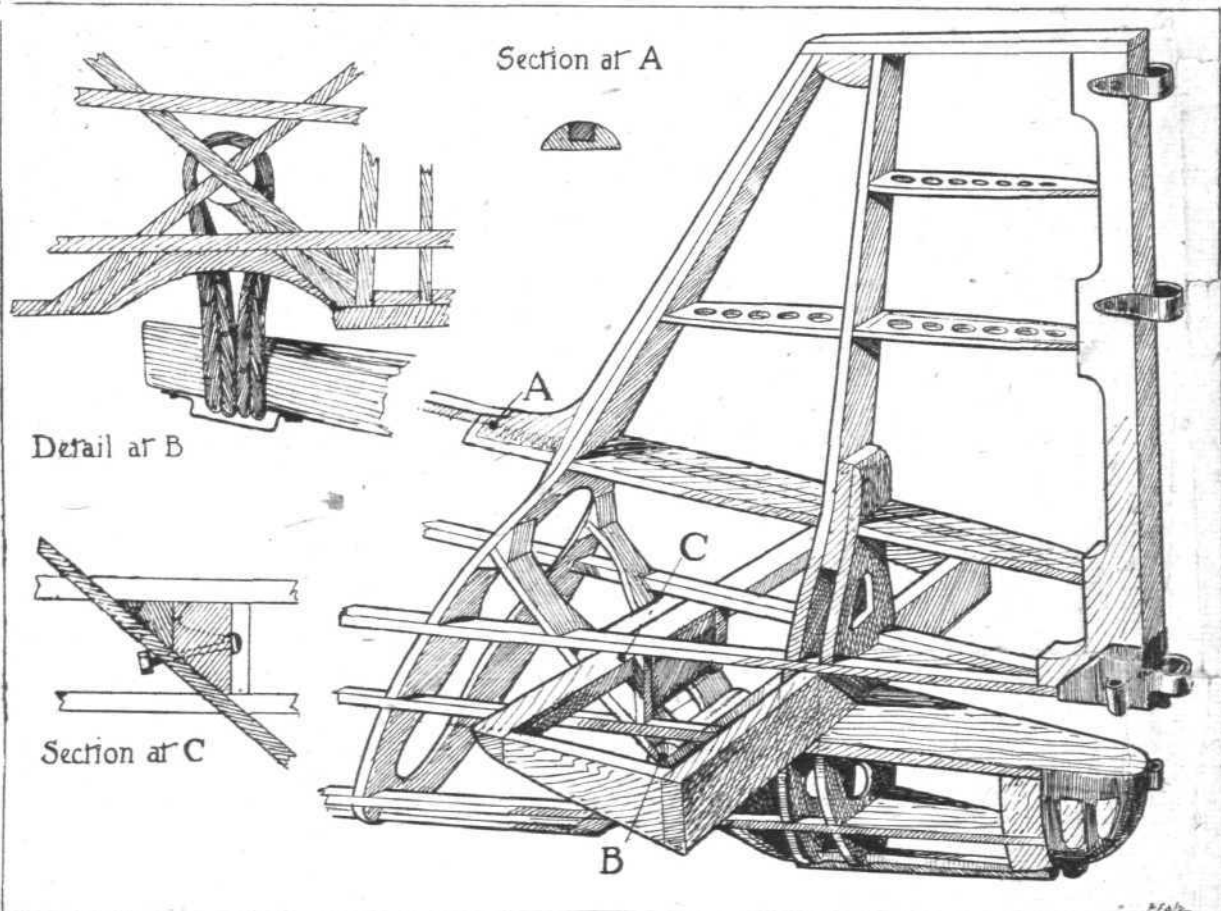
160 H.P. MERCEDES ENGINE.

(Continued from page 827.)

At the stern the Pfalz body terminates, as shown in the illustrations in our last issue and further illustrated in detail in Fig. 6, in a somewhat elaborate framework of wood, which performs the various functions of forming supports for the tail plane, tail skid, and vertical fin with its rudder. The

fin, and is reinforced above the body with other pieces of wood to give it a rounded edge. The last former is in duplicate, its front half extending upwards to form a member of the fin, while the other half terminates just above the body and serves chiefly as a support for the short length of

Fig. 6.—Sketch showing mounting of the tail plane root on the Pfalz. The plywood covering of the root has been omitted for the sake of clearness.



design of this part of the body must have provided some pretty problems in projection drawing, and one is inclined to think that a little less rigid economy in metal fittings might have resulted in a considerably simpler design. The second former from the stern is, it will be seen from Fig. 6, sloped backwards to form the leading edge of the vertical

spar to which the front spar of the tail plane is attached. Between these two formers and sloping so as to form in side view a cross, are another two formers, built up in much the same manner as the main body formers. The angle formed by one of these and the *longeron* accommodates the leading edge of the small plane permanently fixed to the body, while

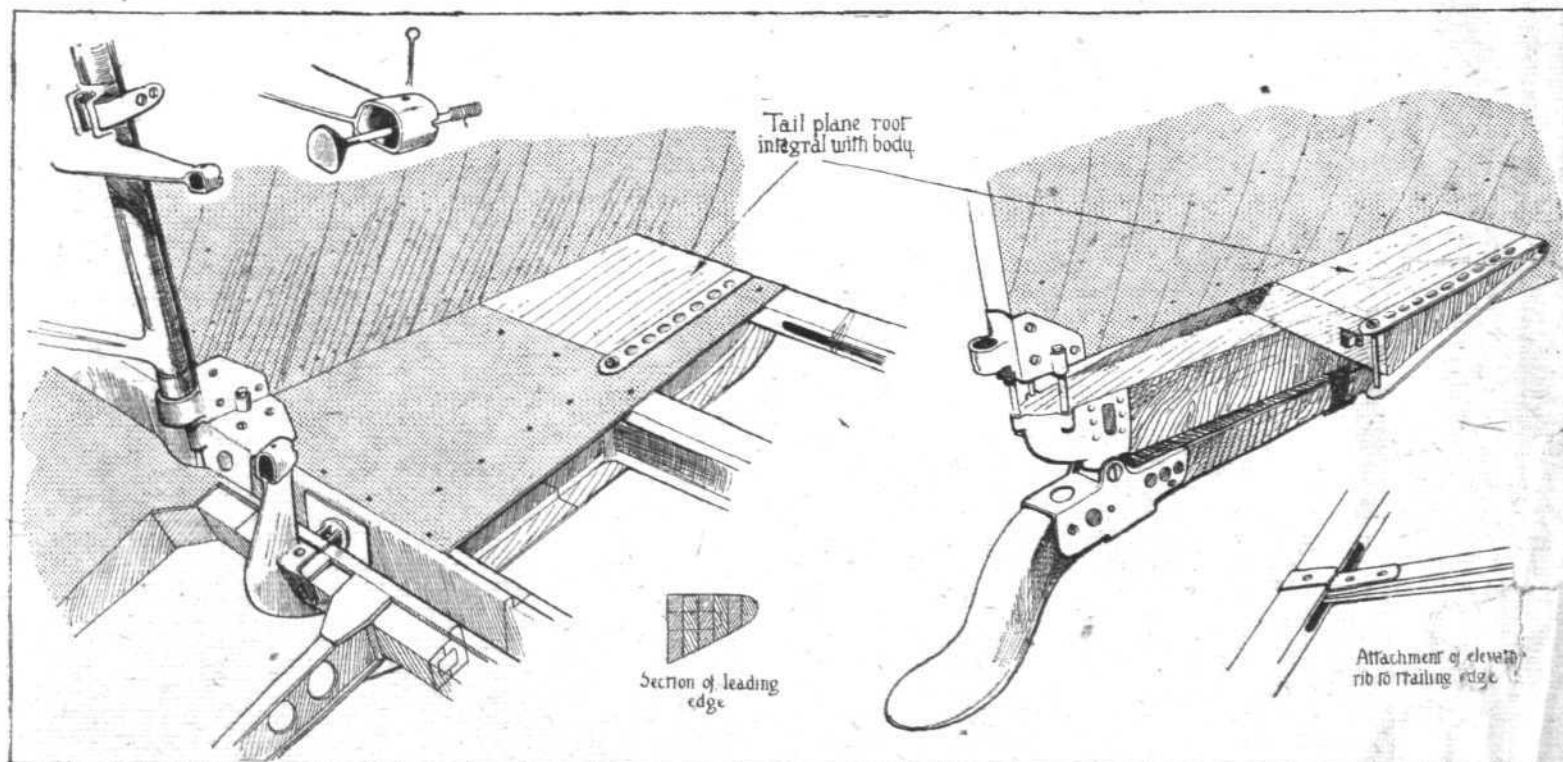


Fig. 7.—Some tail plane details of the Pfalz.

the point of intersection of the two formers supports a short transverse cylindrical piece of wood, around which is wrapped the shock absorbers for the tail skid. The details of both these joints are shown in the sketches of Fig. 6. The small tail plane root is covered, on the actual machine, with plywood, but this has been omitted in the sketch in order to better show the constructional details.

The tail plane itself is in one piece, and fits into the slot provided for it in the body. The manner in which it is secured after being placed in its slot will be clear from an inspection of Fig. 7. The front spar rests in the slot in the body, and is secured against lateral tilting by a steel band on each side, overlapping the butt joint between the front part of the rib and the tail plane root, as shown in Fig. 7. The rear spar of the tail plane is locked in place by two long bolts and a stud. The two bolts are placed one on each side of the stern, as indicated in the sketch in Fig. 7, while the stud passes through a lug welded on to the extreme rear of the steel shoe surrounding the heel of the fuselage into another lug near the foot of the stern post. The whole tail plane with its elevator can therefore be removed by undoing five nuts, and, of course, the connections in the elevator control cables.

As regards the tail plane and elevator themselves, these are constructed along more or less standard lines and do not

is also bent back to form the tips of the tail plane, is laminated as shown in Fig. 7, and is lightened by spindling between the ribs. The laminations are probably steamed so as to be easily bent to form the rounded corners of the tail plane.

The elevator, owing to the fact that the rudder has no downward projection, is in one piece, and is built up in a manner similar to that of the tail plane. Its leading edge is formed by a box spar, and the ribs are similar to those of the tail plane. The attachment of the ribs to the trailing edge is somewhat unusual. Instead of the flanges of the ribs passing over the trailing edge they are thinned down and pass into a slot in the trailing edge as shown inset in Fig. 7. They are then secured in place by a small metal clip. The slots in the trailing edge appear to have been made with a circular cutter of about 3 in. diameter, the ends of the rib flanges being placed where the slot is deepest. The elevator hinges are formed by forked bolts passing through the rear spar of the tail plane, and corresponding with eye bolts through the leading edge of the elevator.

The elevator crank levers are of a type frequently found on German machines. The crank itself is of stream-line section, and is welded to a channel section base plate surrounding three sides of the leading edge. Another base plate of similar shape, but made of lighter gauge, is slipped over the leading edge from the front, and forms a washer for the hinge bolt, which passes through the leading edge at a point coincident with the crank lever. The attachment of the elevator and rudder cables to their respective cranks is in the form of a ball and socket joint, or, more correctly speaking, the ball portion of it is not a complete ball but a slice of a sphere, formed integrally with the bolt passing out of the socket into the barrel of the wire strainer. The socket, and also the ball have a flat formed on one side so as to prevent the ball from turning in the socket. Behind the ball a small split-pin passes transversely through the socket, thus preventing the ball from dropping out of the socket when the control cables are removed. The socket is kept filled with grease.

The rudder, which, as already pointed out, is placed wholly above the elevator, is built entirely of steel tubing. The ribs are joined, not directly to the rudder post, but to a collar of very light gauge, which is in turn pinned and braced to the rudder post. The object of this construction probably is to avoid weakening the rudder post by welding, since all the rudder ribs can then be welded to their collars on a jig, the rudder post being inserted afterwards and the collars pinned in place. The rear end of the ribs is joined direct to the trailing edge by welding. The method of tapering the rib tubes down towards the trailing edge is different from anything we have yet seen on a German machine. A vertical slice is taken out of one of the tubes, and the edges thus formed are pushed over the other tube of the rib as indicated in Fig. 8, the two tubes being held together by short welds at intervals.

The foot of the rudder post rests in a cup or shoe on the trailing edge of the vertical fin, while additional hinges are provided at intervals. The form these hinges take is shown in Fig. 8. To prevent the rudder post from sliding up and down a collar is placed above and one below each hinge. To these collars are welded two U-shaped rods around which is wrapped fabric in order to form an air tight joint at the points where the hinge pierces the rudder covering. This is also shown in Fig. 8. The fabric wrapping has been omitted for the sake of clearness.

The tail skid is of somewhat unusual shape, as shown in the right-hand sketch of Fig. 7. Owing to the fact that there is no vertical fin below the body of the Pfalz, and no downward projection of the rudder, it has been possible to reduce head resistance of skid by making it horizontal for the greater part of its length, with just a downward curve at the rear to give greater clearance for the tail plane. The skid is pivoted on a bolt passing through a lug on the heel of the fuselage. Its free end is sprung by rubber cord from the short cylindrical piece of wood already referred to, and shown in Fig. 6. This attachment looks remarkably weak—a piece of wood, slotted at its ends to fit over the cross formed by the two sloping body formers. Yet in all the captured specimens of Pfalz machines that we have had an opportunity to examine, this particular member has never been broken, so that one can only infer that it is stronger than it appears. As to the skid itself, it is built up of ten laminations of wood, each about 5 mm. thick. At the rear the skid is provided with a sheet metal shoe to protect it against wear.

(To be continued.)

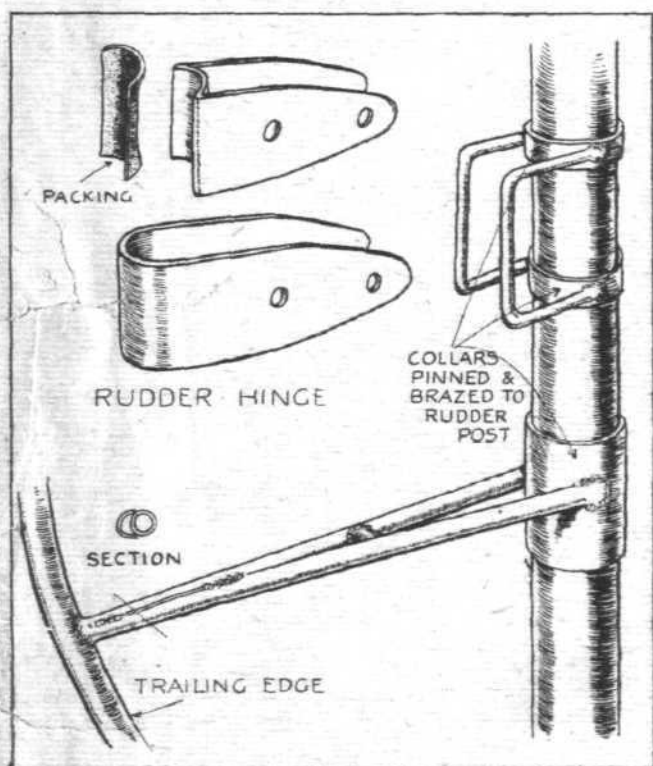


Fig. 8.—The rudder of the Pfalz is built up of steel throughout. The sketches show the main features of the detail construction.

present any especially remarkable features. It has already been pointed out that the tail plane appears at first sight to have been put on "upside down," having a flat top surface and a convex bottom surface. The reason for this is not apparent, but it is possible that the disposition of the various weights and surfaces is such that there is either a lift-weight couple or a thrust resistance couple or both; and that this section tail plane has been employed to equalise such couples. However, in a later machine captured and now at the Enemy Aircraft View Rooms the shape of the tail plane has been altered to a symmetrical section, so that it would appear that the "inverted" section has either been found unsatisfactory in practice or the reasons for its employment removed in a later design. Structurally the tail plane is built up of spruce spars with ribs having ash flanges and poplar webs. The inner ribs are covered with three-ply to give extra rigidity for attachment to the body. The front spar is of I section while the rear spar is channel section, with recesses top and bottom for forming a flat surface with the rib flanges. There is no internal wire bracing, the necessary rigidity being obtained by means of diagonal ribs and by plates of three-ply placed over the joints between-ribs and spars. The leading edge, which

The King and the A.A. Defences.

It was announced in the *Court Circular* that the King, accompanied by the Queen and the Prince Albert, and headed by General Sir William Robertson (General Officer

Commanding-in-Chief, Great Britain), Major-General E. B. Ashmore (Commander-in-Chief of the London Air Defence Area), and Capt. B. Godfrey-Faussett, R.N., visited some of the London Air Defences on the morning of July 26th

THE ROYAL AERO CLUB OF THE U.K.

OFFICIAL NOTICES TO MEMBERS.

SPECIAL COMMITTEE MEETING.

A SPECIAL MEETING of The Committee was held on the 25th inst., when there were present:—Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S., in the chair, Mr. Ernest C. Bucknall, Col. F. Lindsay Lloyd, C.M.G., Mr. J. H. Nicholson, Mr. T. O. M. Sopwith, and Lieut.-Com. H. E. Perrin, R.N.V.R., in attendance.

Election of Members.—The following new members were elected:—

Capt. Hubert Edward Peter Dyke Acland (XI Lancers, I.A.).

Capt. Edward de Ville, R.A.F.

Maj. Thomas Richard Henry Garrett, R.A.F.

Lieut. Edward Grahame Johnstone, R.A.F.

Lieut. Cecil Clement Knight, R.A.F.

Capt. Jocelyn Morton Lucas.

2nd Lieut. Claudius William Pidcock, R.A.F.

Major Viscount Tiverton, R.A.F.

Lieut. John Noël Wilkinson, R.E., attd. R.A.F.

Daily Mail £10,000 Cross-Atlantic Flight.—The question of the re-opening of the *Daily Mail* £10,000 Cross-Atlantic Flight was considered, and it was decided that the agreement between the Club and the *Daily Mail* of April, 1916, that the competition could not take place until after the war, be upheld.

THE FLYING SERVICES FUND

(Registered under the War Charities Act, 1916).

Honorary Treasurer:

The Right Hon. LORD KINNAIRD.

Committee:

Brig.-Gen. W. W. WARNER, R.A.F. (Chairman).

Mr. CHESTER FOX.

Lieut.-Col. HARCOURT G. GOLD, R.A.F.

Lieut.-Col. T. O'B. HUBBARD, M.C., R.A.F.

Lieut.-Col. C. E. MAUDE, R.A.F.

Secretary:

Lieut.-Com. H. E. PERRIN, R.N.V.R.

Bankers:

Messrs. BARCLAY'S BANK, LTD., 4, Pall Mall East, London, S.W. 1.

Objects:

The Lords Commissioners of the Admiralty and the Army Council having signified their approval, THE ROYAL AERO CLUB has instituted and is administering this Fund for the benefit of Officers, Non-Commissioned Officers and Men of the Royal Air Forces who are incapacitated on active service, and for the widows and dependants of those who are killed.

Subscriptions.

	£	s.	d.
Total subscriptions received to July 23rd, 1918	12,791	14	0
Donation from the Canteen and Entertainments Committee, Royal Air Force, Fort Tregantle	50	0	0
Staff and Workers of Gwynnes, Ltd. (Sixty-seventh contribution)	8	19	6
Collected at the Aircraft Supplies Co., Ltd.	1	5	9

Total, July 30th, 1918 12,851 19 3

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.
H. E. PERRIN, Secretary.

THE ROLL OF HONOUR.

(Where an Officer is seconded from the Army, his unit is shown in brackets.)

Published July 23rd.

Killed.

Appleby, P.F.O. E. A. Morrison, Sec. Lieut. E. S.
Boole, Sec. Lieut. J. O. Pascoe, Lieut. C. R. W.
Cattle, Lieut. F. L. Standing, Sec. Lt. W. M.
Macaskill, Sec. Lieut. G. H. Taylor, Lieut. M. S.
(Essex).

Died of Wounds.

Wadsworth, Sec. Lieut. L.

Wounded.

Blundell, Lieut. G. R. (Aus. F.C.). McCallum, Sec. Lieut. J. S.
Booth, Sec. Lieut. S. C. McDonald, Lieut. D. A.
Cheetham, Sec. Lieut. F. W. Smithells, Sec. Lieut. A. K.
(Manch.) (T.F.). Twohey, P.F.O. W. F.
Douglas, Lieut. J. (R.E.). Wald, Lieut. A.
Wise, Sec. Lieut. W. F. M.

Missing.

Bray, Sec. Lieut. C. I. Saunders, Sec. Lieut. W. J.
Harrington, Lieut. J. R. Tuckwell, Lieut. H. A.
Hillis, Lieut. B. S.

Previously Missing, now reported Prisoner in German hands.

Rackett, Lieut. A. R. (Aus. F.C.).

Published July 24th.

Killed.

Ashby, Sec. Lieut. M. G. Lamb, Lieut. H. A. (Res. Cav.).
Bray, Sec. Lieut. H. E. Teetzel, Sec. Lieut. H. D.
Durant, Lieut. W. E. Weight, Lieut. J.
Henderson, Lieut. G. A. F. (Gordon Hrs.).

Previously Missing, now reported Died of Wounds as Prisoners in German hands.

Butler, Sec. Lt. J. O. (R.F.C.). Grose, Sec. Lieut. A. G. (R.F.C.).
Miller, Sec. Lt. G. (R.F.C.).

Accidentally Killed.

Bannister, Lieut. H. S. (Alta. R.). Tunstall, Lieut. G. S. (Manit. R.).

Died.

Ferguson, Lieut. W. B., M.C. (Can. Rly. Trps.).

Wounded.

Denman, Lieut. O. (E. Ont. R.). Naish, Lieut. J. P.
Hagley, Sec. Lieut. R. E. Stead, Sec. Lieut. W. A.
Lange, Lieut. O. J. Travers, Sec. Lieut. H. D.

Missing.

Blight, Lt. T. F. (Manit. R.). Riekie, Lieut. H. H.
Claydon, Lt. A. (Can. F.A.). Wilson, Sec. Lieut. H. L.
Michell, Lieut. P. C.

Previously Missing, now reported Prisoner in German hands.

Hall, Lieut. C. R. (Queb. R.).

Published July 25th.

Killed.

Caudell, Lieut. J. H. Moore, Lt. J. G. (Rif. Bde.).
Edwards, Sec. Lieut. R. S. Robinson, Sec. Lieut. T. V.
Grimshaw, Sec. Lieut. G. H. Souther, Sec. Lieut. T. H.

Previously reported Prisoner, now reported Killed.

Payne, Sec. Lieut. H. A. (R.F.C.).

Died of Wounds.

Jones, Lieut. D. B.

Wounded.

Clarke, Sec. Lieut. H. W. MacPherson, Lieut. K. D.
Crossley, Lieut. F. S. Riggs, Sec. Lieut. T. H. R. (Linc.).
Jones, Sec. Lieut. S. H. F. Watson, Sec. Lieut. H. H.
Macdonald, Sec. Lieut. H. O.

Missing.

Burphy, Sec. Lieut. H. W. Hunter, Lieut. D. Y.
Chubb, Lieut. J. A. Reynolds, Sec. Lt. E. G.
Gordon, Lieut. H. A. Scrivener, Sec. Lt. H. K.

Published July 26th.

Killed.

Clarkson, Sec. Lieut. T. C. Prior, Sec. Lieut. H. L. (R Fus.).
Elliott, Lieut. H. J. Smith, Sec. Lt. J. H. (Middx. T.F.).
Oakley, Lieut. M. F.
Pierce, Lieut. R. G.

Died of Wounds.

McCudden, Major J. B., V.C., D.S.O., M.C.

Previously Missing, now reported Died as Prisoner in Turkish hands.

McConnell, Lieut. H. L. C. (I.A.R.O., attd. R.F.C.).

Died.

Gibson, Sec. Lieut. D. P. Sutton, Sec. Lt. A. E. B. (King's L'pool).
Heywood, Lieut. A.

Costello, P.F.O. W. J.
Gonyou, Capt. H. H.
Gowing, Lieut. E. E.
Hyndman, P.F.O. E. B.
Johnstone, P.F.O. J. M.
McClure, Lieut. I. H.
McCormick, Lieut. H. A.

Wounded.

MacDonald, Sec. Lieut. A. G.
Matthews, Sec. Lieut. H. S.
Russell, Lieut. F. S.
Thornton, P.F.O. S. H.
Walters, P.F.O. L.
Whiteley, Lieut. R. I.

Robertson, Sec. Lieut. D. B.
Sier, Sec. Lt. H. J. (R.F.A.,
(S.R.)).

Spark, Sec. Lt. W. S.
Sherwin, Capt. C. E. (R.E.,
Hamp. Fort. (T.F.)).

Missing.

Bird, Lieut. B. A. (K.R.R.C.).
Cowan, Sec. Lt. A. R. (Res.
Lancers).

Horton, Capt. G. D.
Turner, Sec. Lieut. W.

Published July 29th.

Killed.

Frederick, Sec. Lieut. L. M.
Meddings, Sec. Lieut. W. W.
Morton, Sec. Lieut. R. H.

Oram, Sec. Lieut. W.
Pellow, Sec. Lieut. R. C.
Winks, Sec. Lieut. J. G.

Previously Missing, now reported by German Government Killed or Died of Wounds.

Foley, Lieut. R. G., M.C. (E. Ont. Regt.).

Accidentally Killed.

Swannell, Lieut. C. E., M.M. (Manit. Regt.).

Died of Wounds.

Holland, Sec. Lieut. J. H. (R. Fus.).

Drowned.

Hunter, Sec. Lieut. W. A.

Died.

Hawke, Sec. Lt. S. (Aus. F.C.).

Quinan, Capt. B. C. (Sask.).

Wounded.

Arnold, Sec. Lieut. F. T.
Booth, Sec. Lieut. H. (W.
Yorks).
De Niverville, Lieut. A.
Hammond, Sec. Lieut. J. E.
Hardwick, Lieut. G. N.

Marshall, Sec. Lieut. W. S.
Moffat, Sec. Lieut. I. McL.
(R.G.A.).
Perry, Lieut. W. G. (Quebec)
Simpson, Lieut. A. E.

Missing.

Battle, Lieut. A. J.
Dickinson, Lieut. H. M.
Dunn, Sec. Lieut. R. H.
Hinchliffe, Sec. Lt. H. E.
(Manch. R.).

Kane, Lt. M. H. K., M.C.
(R. Dub. Fus.).
Loupinsky, Lieut. J.
McFaul, Lieut. L.
Mackie, Lt. J. M. (Manit.).
Ridley, Lieut. C. B.

Previously Missing, now reported Wounded and Prisoner in German hands.

Birley, Sec. Lieut. T. E. H. (R.F.C.).

Previously Missing, now reported Wounded and Prisoner.

Chadwick, Capt. G. (Manch.) (T.F.).

Missing.

Briggs, Lieut. C.
McConnell, Lt. H. J. (R. Ir.
Rif.).

Hall, Lieut. K. W. J.
Tempest, Sec. Lieut. W. C.
Warner, Sec. Lieut. W. H.

Prisoners.

Bensley, Lieut. E. F.

Peers, Lieut. J. A.

Previously Missing, now reported Prisoner.

Hamilton, Sec. Lieut. G.

Interned.

Barker, Capt. E. R.
Hudson, Lieut. F. H.

Kinmond, Sec. Lieut. D. C.

Published July 27th.

Killed.

Colbourne, Sec. Lieut. J. L.
Felhauser, Sec. Lieut. C. V.
Howson, Lt. C. J. (King's
L'pool).

Handel, Sec. Lieut. K. D.
Maden, Capt. F.
Nicholls-Pratt, Sec. Lt. G.
Whitfield, Lt. N. B. (Yeo.).

Died of Wounds.

Scaramanga, Lieut. J. J.

Wounded.

Anderson, Fl.-Sub-Lt. W. S.
Densham, P.F.O. H. C.
Everitt, Lieut. J. P.
Fellows, Sec. Lieut. H.

Godfrey, Lieut. A. L.
Hoskins, Lieut. H. V. M.
Jeans, Lieut. W. D.
Jenkins, Lieut. N. H.



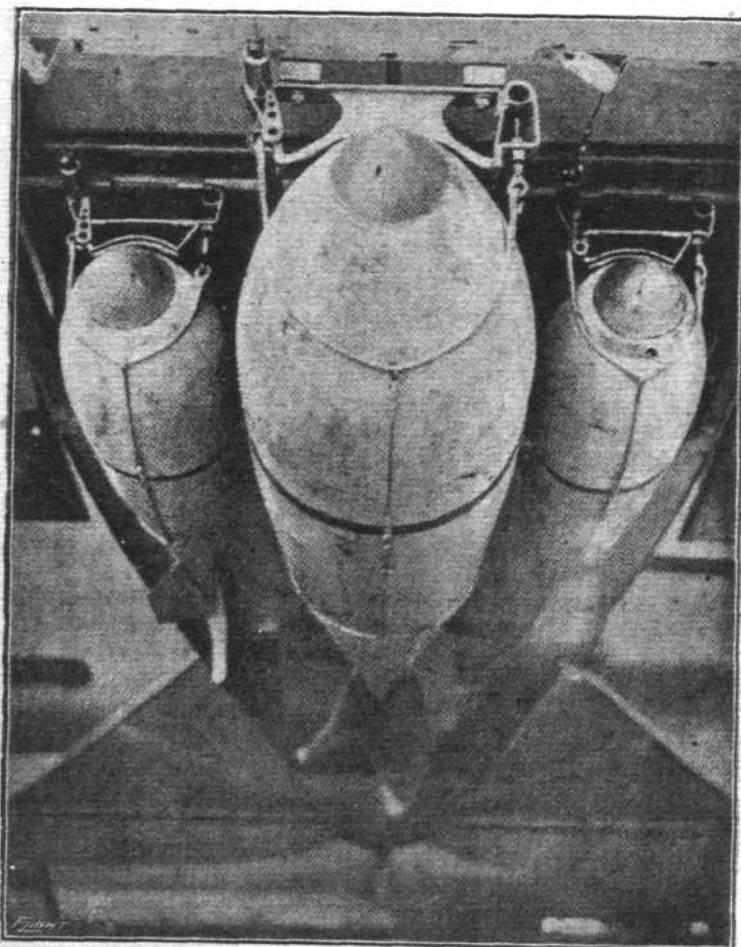
Harrying the Austrian Submarines.

"ABOUT eight times in the last five months the bald statement has appeared in the English Press that 'British aeroplanes bombed the Austrian dockyard at Cattaro,' and in addition to this there have been half a dozen photographic and reconnaissance flights as well. Few people," says Mr. G. Ward Price in a message from Brindisi on July 23rd, "who have read these stilted official statements realise what they mean."

"The air defences of Cattaro are as formidable as the importance of the base there warrants. There is a tremendous anti-aircraft fire, and, besides that, a force of fast Austrian aeroplanes ready to attack our fliers under conditions of great advantage to themselves. This flight, indeed, which is one of the most important defensive measures against enemy submarines which we possess, is also among the most risky enterprises undertaken anywhere by the Royal Air Force."

"Our machines go over the Gulf of Cattaro generally four at a time. They carry about three-quarters of a ton of bombs, and, not content with dropping these, they take some of the best aeroplane photographs I have ever seen as illustration of their work. When you study these pictures, taken in successive raids, you realise the effect which our persistent air-attacks have had upon this nest of Austrian sea-serpents. In the first photograph taken, when our machines went over to drop bombs for the first time, you see about a dozen submarines lying close together in their dockyard on the north side of the Gulf, as snug as can be. The Gulf of Cattaro is a long rambling place, divided up into several compartments. They were well inside it, and they felt so safe that they could all lie alongside and be friendly."

"When the first bombs began to drop about them, they thought better of this and decided that it would be wiser to separate a little. Accordingly in the photograph of the next couple of raids, you find them divided up, some on one side, some on the other. But even so, they were not safe, and the rule was made that when the British planes came over all the submarines should at once move out into the gulf and submerge. So the next picture shows them all scuttling off like so many water beetles, with a British bomb in full flight through the air towards them. And in the later photographs it is hard to find any submarines at all. They are all under water hiding. And even if the submarines themselves are not hit during our raids, as there is good reason to hope they may have been, the workshops and stores are hit."



The Nest.—Three German bombs suspended below the fuselage of a twin-engined bomber. The two smaller bombs weigh 50 kg., while that in the centre is of the 300 kg. variety.

THE ARMY AND THE R.A.F.

AN Army Order which has been issued makes certain additions to the Army Act in connection with relations between the Army and the R.A.F.

1. The following addition has been made to the Army Act by the Army (Annual) Act, 1918:—

At the beginning of Section 179A* of the Army Act the following sub-section shall be inserted:—

(1.) The Army Council may direct from time to time that any officers or soldiers of the Regular forces shall, under such conditions as may be prescribed by regulations made by the Army Council and the Air Council, be temporarily attached to the Air Force.

2. At the beginning of Section 179A of the Air Force Act the following sub-section has been inserted:—

(1.) The Air Council may direct from time to time that any officers or airmen of the Regular Air Force shall, under such conditions, as may be prescribed by regulations made by the Air Council and Army Council, be temporarily attached to a military force.

3. The following "Regulations" have been prescribed by the Army Council and the Air Council:—

Conditions prescribed by the Army Council and the Air Council under the powers granted to them by Section 179A, Sub-section (1) of the Army Act and Section 179A, Sub-section (1) of the Air Force Act.

WHEREAS by Sections 179A of the Army Act and 179A of the Air Force Act it is provided that under such conditions as may be prescribed by regulations made by the Army Council and the Air Council:—

(a) Officers and soldiers of the Regular Forces may be temporarily attached to the Air Force by directions given from time to time by the Army Council, and

(b) Officers and airmen of the Regular Air Force may be temporarily attached to the Regular Forces by directions given from time to time by the Air Council.

NOW THEREFORE it is hereby declared that the following shall be the conditions upon which officers and soldiers of the Regular Forces may be temporarily attached to the Air Force:—

(a) If the Air Council concur in the directions for such attachment given from time to time by the Army Council, or if such directions are given by the Army Council in pursuance of and in accordance with any order or instruction issued by the Army Council with the approval of the Air Council.

AND it is hereby further declared that the following shall be the conditions upon which officers and airmen of the Regular Air Force may be temporarily attached to the Regular Forces:—

(b) If the Army Council concur in the directions for such attachment given from time to time by the Air Council, or if such directions are given by the Air Council in pursuance of and in accordance with any order or instruction issued by the Air Council with the approval of the Army Council.

Signed on behalf of the Army Council, IAN MACPHERSON,
C. F. N. MACREADY, A.G., C. H. HARRINGTON, D.C.I.G.S.

Signed on behalf of the Air Council, JOHN BAIRD, F. H. SYKES, C.A.S., GODFREY PAINE, M.G.P.

Dated this 12th day of June, 1918.

4. The following "Directions" were issued by the Air Council under the above Regulations on 26th June, 1918:—

Directions given by the Air Council with the concurrence of the Army Council pursuant to the Regulations dated 12th June, 1918, made by the Army Council and Air Council.

The following officers and airmen of the Regular Air Force shall be temporarily attached to the Regular Forces, namely:—

1. Every officer and airman of the Regular Air Force who is for the time being or from time to time serving in any military command depot in the United Kingdom; and

2. Every officer and airman of the Regular Air Force who is for the time being or from time to time serving in any military hospital in the United Kingdom from the time of admission until discharged.



Attempted Raid on Paris.

AN enemy aeroplane, apparently reconnoitring, succeeded in reaching the outskirts of Paris at about 11 o'clock on the morning of July 22nd. It was turned back by the defending barrage fire. No damage is reported.

French Bring Down a Bomber.

A BOMBING machine of the F.F. type was brought down about midnight on July 23rd whilst flying near Senlis, south of Compiègne.

An officer or airman of the Regular Air Force attached to the Regular Forces under 1 or 2 above written, shall continue attached as aforesaid only whilst serving as aforesaid.

3. Any officer or airman of the Regular Air Force, who in the case of any emergency is ordered to be attached to the Regular Forces by the Officer Commanding any portion of the Air Force serving overseas, with the assent of the General Officer commanding that portion of the Regular Forces which is serving in the same place overseas; but in such case the officer issuing the order and the General Officer who assents thereto shall communicate the fact to the Air Council and Army Council respectively. An officer or airman attached to the Regular Forces in pursuance of this clause shall continue to be so attached for so long as may be prescribed by the order by which he was attached, or until such time as an order revoking such attachment is made by the General Officer Commanding the military forces overseas with which he is for the time being serving with the assent of the Officer Commanding any body of the Air Force serving in the same place overseas, or until such time as an order revoking such attachment is made by the Army Council with the assent of the Air Council.

4. Any officer of the Regular Air Force during such time as he may, for the purpose of instruction, be in attendance at a court-martial convened under the Army Act.

*Section 179A of the Army Act was added by the Air Force (Constitution) Act, 1917, and is as follows:—

Where an officer or airman of the Air Force is attached to, or seconded for service with, the Regular Forces, this Act shall apply to him, subject to the following modifications:—

(a) A general court-martial for the trial of any such officer or airman shall not be convened except by His Majesty or by an officer authorised to convene general courts-martial under the Air Force Act (who shall have power to convene such a court-martial for the purpose of this section), except that when such officer or airman while subject to this Act is serving beyond the seas with a body of the regular forces, and in the opinion of the general or other officer commanding that body (such opinion to be stated in the order convening the court and to be conclusive) there is not present any officer authorised under the Air Force Act to convene a general court-martial, a general court-martial convened by such general or other officer, if authorised to convene general courts-martial under this Act, may try such officer or airman;

(b) A district court-martial for the trial of any such airman may be convened by any officer having authority to convene a district court-martial for the trial of a soldier of the regular forces;

(c) Without prejudice to any power of confirmation the findings and sentences of any general court-martial on any such officer or airman may be confirmed by His Majesty or by an officer authorised under this section to convene the same.

(d) Anything required or authorised by this Act to be done by, to, or before the Army Council or Judge Advocate-General may as regards any such officer or airman be done by, to, or before the Air Council; and the provisions of this Act shall be construed, so far as respects any such officer or airman, as if "the Air Council" were substituted for "the Army Council" and "Judge Advocate-General" wherever those words occur;

(e) Anything required or authorised by this Act to be done by, to, or before the Commander-in-Chief of the forces in India, or the general or other officer commanding the forces in any colony or elsewhere, may as regards any such officer or airman be done by, to, or before such officer as the Air Council may appoint in that behalf, and, if no such appointment is made, by such Commander-in-Chief or general or other officer;

(f) If any such officer or airman commits an offence for which he is not amenable under this Act, but for which he can be punished under the Air Force Act, he may be tried and punished for such offence under that Act.

A Raid on Dunkirk and Calais.

THE raid on the Calais and Dunkirk district on the night of July 21st began at 11 o'clock. The Gothas dropped 19 bombs, but the material damage was slight. Returning at 1 a.m., several bombs and aerial torpedoes were dropped. There were 28 victims of this attack, and the damage was somewhat heavy.

Two machines were brought down by anti-aircraft guns, one falling in the neighbourhood of Bergues (5 miles from Dunkirk). The aviators were taken prisoners.

AIRISMS FROM THE FOUR WINDS

MAJOR-GENERAL BRANCKER more than simply appreciates "FLIGHT's" slogan "One service; one uniform; one badge." In the United States he strenuously urges it as vital for America to follow by establishing an Air Ministry in Washington modelled on the lines of the British Ministry. "The American Air Forces," he is reported as saying, "should be organised on a basis independent of the land and sea forces, and the appointment of an independent head is vitally important. Until an Air Ministry is appointed, and the Allies co-ordinate their efforts in the aerial department, General Brancker will make no predictions about an aerial offensive on a grand scale carried to the cities of the Germans remote from the battle line."

MISS CHRISTABEL PANKHURST was not only speaking on behalf of the Women's Party, but was voicing the feelings of nine-tenths of the male population of this country; when last week she said at the St. Martin's Theatre, "there was more than a coincidence in the success of the Allied arms on the Western front and the threat of a munitions strike in this country. Berlin had ordered this strike and the Bolsheviks and pacifists, who were fomenting it, were only obeying the orders of their German masters. The Women's Party demanded of the Government that it should show that it meant business by taking the shirkers and putting them into the trenches. The Germans had given the signal for this strike because they knew that if our Armies were starved of munitions and aeroplanes the military genius of Foch and the valour of the Allied troops would be in vain. Women munition makers, rallied by the Women's Party, which got them into the munition factories, had prevented strikes in the past. Consequently the pacifists had been trying to work on the women. The party had a letter from one of the storm centres which made it fairly certain that the women were being told to strike."

VERY terse and in keeping with the whole trend of hustle now in evidence from all sides, was Mr. G. Ward Price's message from Brindisi last week:

Such are the conditions, said Mr. Price, of speed, action, and energy that characterise the campaign which the Italians with their British naval and aerial Allies are carrying on against the Austrians in Albania that it has been possible for me during the last 20½ hours to:—

- 1.—Fly across the Adriatic from Brindisi to Valona.
- 2.—Motor out to the new Italian front line in Albania.
- 3.—Visit Fieri, taken from the Austrians in the last advance; cross the Semeni by a new bridge alongside the Ponte de Metalli, that the Austrians blew up in their flight; see the captured piles of war material and the admirable work of development and civilisation that the Italians are carrying on in Albania.
- 4.—Visit the admiral and the general commanding the Italian forces in Albania.
- 5.—Call on the British senior naval officer at Valona, the fire of whose monitors helped to hasten the Austrian retreat.
- 6.—Swim in the Vojusa River, which was the old Italian front line.
- 7.—Lunch and dine in a fairy summer palace, overlooking Valona Bay, built as a mess for the Italian Headquarters Staff at Valona, which itself is little more than a primitive Albanian village.
- 8.—Take part in a moonlight bombing raid on Durazzo.
- 9.—Fly back across the Adriatic to Brindisi.

"KULTUR" has its own inimitable way of handling unpleasant truths and facts, as witness the story of the great Hun "victory" in the Marne pocket. And here is how the German press dish up in attractive black headlines their reference to the recent trip to London and back by aeroplane of the King and Queen of the Belgians. "King Albert and his Queen," so the headings announce, "panic-stricken at the near approach of the German forces to their hiding-places, have fled to London."

"FORTY-SEVEN" in *The Star* had an ugly tale to tell the other day of the difference in treatment of recruits over 40 in the Army so cheerfully described by Mr. Macpherson and the old men in the Air Service. "Forty-seven" avers that

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Ministry of
Information.

The resting-
place of the
late Major
McCudden, V.C.,
D.S.O., M.C.,
D.F.C., M.M.,
on the British
Western
front in
France.



in the latter's case "no difference is made in their case. They are expected to march as far and fast as strapping lads of twenty. Men over forty-five, who have never slept out of their beds in their lives, on arrival in camp have in the recent foul weather been sent straight into tents, and without ground-sheets. In the Army, says Mr. Macpherson, the older men are placed under senior instructors. But in the Air Service they are bullied unmercifully by youthful corporals."

This conveys only a faint suggestion of the way the "old men" in the R.A.F. are being put through it—at least, at the great distributing camp which harbours the tired body of "Forty-seven."

If a true bill, a quick remedy should be found, and it hardly sounds like R.A.F. treatment. All the same, *some* of the stories we hear are almost beyond belief, and, moreover, they refer to men of *all* ages. If drastic official action is not immediately taken, in all probability the gravest and most horrible scandal of the war will presently result.

* * * * *

Officers Wanted for the W.R.A.F.

THE Air Ministry announce that they wish to recruit at once a large number of women officers for the Women's Royal Air Force.

The duties of these officers will be to supervise and control the W.R.A.Fs. employed at various camps in the United Kingdom.

The scale of pay (with quarters) is as follows:—	£
Hostel Administrator (in charge of Hostel)	175
Deputy Administrator (in charge of Hostel)	150
Assistant Administrator (in charge of Hostel)	120
Technical Superintendent (at R.A.F. units)	150
Assistant Technical Superintendent (at R.A.F. units) ..	120
Quartermistress (attached to Hostel or R.A.F. unit) ..	150
Assistant Quartermistress (attached to Hostel or R.A.F. unit)	120

In case of officers who are entitled to free quarters, and are not able to obtain accommodation in Government hostels or billets, a lodging allowance of 2s. 3d. a day will be given in lieu.

Women of good education and between the ages of 25 and 45 are invited to apply. All candidates will be required to appear before a W.R.A.F. Selection Board and Medical Board, which for the convenience of applicants will be held in various parts of the country. All particulars may be had by written application to either the Headquarters of the W.R.A.F., Mason's Yard, St. James's, S.W. 1, or to the Women's Professional Register, Queen Anne's Chambers, S.W. 1, or to the Divisional Officers of the Employment Exchange



THE W.R.A.F. OFFICERS' UNIFORM.—The uniform consists of R.A.F. blue material, with gold braid, white blouse, and black tie. The cap badge is the same as for the R.A.F. Our photograph shows the uniform of an Area Inspector.

Department, Doncaster, Newcastle, Manchester, Bristol, Cardiff, Birmingham, Edinburgh, or Dublin. Envelopes should be marked outside, "Officer, W.R.A.F."



Orville Wright (left) in front of a Liberty D.H. 4.

PERSONALS

Casualties.

Major HERBERT SELWYN ASTON, M.C., who was killed by an aeroplane bomb on July 13th, a fortnight before he hoped to be married to Mrs. Oswald Bainbridge, was the eldest son of Mr. and Mrs. Aston, of Davenport, Cheshire. He was educated at the King's School, Chester, and New College, Oxford, gaining first place in science in all England at the Cambridge local examinations, and, as head of the school, being awarded the Duke of Westminster's gold medal—a much-coveted trophy. He was elected an open scholar at New College, Oxford, taking, in his third year, a degree in the final honours, school of science. He rowed in the college eight in his second year. After leaving Oxford he joined the Special Reserve of Officers, and was gazetted to the Highland Light Infantry in June, 1914. He went on active service in September, and was wounded at the first battle of Ypres on November 15th. After some months on duty at home with his regiment, he transferred to the Machine Gun Corps on its formation, and was promoted captain from October, 1915. In April, 1917, he proceeded to France a second time, and was posted to the 9th Division, taking part with it in all the hard fighting that won for it special and distinguished mention. Early in the present year he was gazetted major, and given seniority as second in command of his battalion. For his gallantry and resource on Mount Kemmel on April 25th he was awarded the Military Cross.

Lieut. ERIC BAINBRIDGE, who was reported missing as long ago as September, 1916, and is now officially reported dead, was 18 years of age and was the youngest son of the late Reginald Newton Bainbridge, of Assam, and Mrs. Emily Bainbridge. He was educated at the Victoria College, Jersey, where he was a member of the O.T.C., and he also belonged to the Essex Volunteer Regiment. He obtained a commission in the R.F.C. in April, 1916, and in September of the same year, when on patrol duty abroad with two other machines, encountered a superior enemy squadron. Lieut. Bainbridge was seen to attack four of them, but in his turn was attacked by two others and brought down in the enemy lines.

Sec. Lieut. CHARLES FRANK BERRY, R.A.F., who was killed in action on July 17th, was the son of R. and A. Berry, of 75, Nelgarde Road, Catford.

Maj. RODERIC STANLEY DALLAS, D.S.O., D.S.C. (and bar), R.A.F. (late R.N.A.S.), aged 25, who was recently killed in an aerial combat abroad, was the son of Mr. Dallas, of Taranga, Queensland, Australia. At the beginning of the war he obtained a commission in the Australian Army, and afterwards obtained permission to take up flying. Joining the R.N.A.S. on June 25th, 1915, he quickly became an efficient pilot, and proceeded on active service to the Belgian coast at the end of November of that year. As a scout pilot he was with the R.N.A.S. squadrons which co-operated with the French at Verdun, and afterwards with the R.N.A.S. squadrons attached to the Army on the Somme. He gained the D.S.C. and the Croix de Guerre for his work on the Belgian coast and with the French, and the bar to the D.S.C. whilst attached to the Army. He was also awarded the D.S.O., and was several times mentioned in despatches. Maj. Dallas was officially credited with having destroyed 39 enemy machines, more than half of which were destroyed by him while he was in command of an R.N.A.S. squadron.

Lieut. ARCHIBALD HAMILTON FITZMAURICE, R.A.F., formerly 2nd Lieut., 16th Lancers and Somali Camel Corps, who was reported missing on March 12th, and has now been reported killed on that date, aged 23, was the second son of Maj. D. C. M. Fitzmaurice, Lancs. Fus., and grandson of the late Hon. F. O. B. Fitzmaurice, Commander, R.N., and of Mrs. Macintosh, of Fordlands, Newton Abbot. He was last seen in a fight with four enemy aircraft.

Capt. ROBERT ALEXANDER LITTLE, D.S.O. (and bar), D.S.C. (and bar), R.A.F. (late R.N.A.S.), aged 22, who was recently killed abroad in an aerial combat at night, was the son of Mr. R. Little, 263, College Street, Melbourne, Australia. He joined the R.N.A.S. in January, 1916, and proceeded on active service on the Belgian coast in June of that year. Afterwards he went with the R.N.A.S. squadrons co-operating

with the Army on the Somme, and soon established himself as a fearless fighting pilot. He was officially credited with having destroyed 47 enemy machines, and was awarded the D.S.O. (and bar), D.S.C. (and bar), and the Croix de Guerre. At the time of his death he held the "record" among pilots of the late R.N.A.S. for enemy machines destroyed. At Dover immediately before crossing to France, an R.F.C. pilot flew into Dover cliffs on a foggy day and crashed; Capt. Little scaled down the cliffs and rescued the pilot.

Lieut. HERBERT STANLEY RAYNER, who was killed while flying on active service at the front on July 15th, was the only son of Lieut. Alfred D. and Martha Rayner (née Southworth), both late of Clitheroe, but now of Linkhurst, Stonegate, Sussex. He was 28 years of age on the day of his death. Soon after the outbreak of war he joined the Kent Cycle Corps, and obtained his commission in June, 1915. He was posted to a battalion of the Northamptonshire Regiment, and in 1916 was transferred to another battalion of the same regiment in France, where he took part in nearly all the great battles in which the regiment was engaged during the Somme offensive. He was afterwards attached to the R.A.F., and in turn became observer and pilot. He was wounded in May, 1917, and later became a flying instructor in England, and only returned to the front five weeks before meeting his death. He was educated at the Old Forest School, Walthamstow, and in France.

Lieut. FREDERICK CHARLES SMITH, R.A.F., was killed on July 22nd, aged 22. He was educated at Borlase School, Marlow, and joined the R.N.V.R. on August 5th, 1914. He went with the Royal Naval Brigade to Antwerp, was present with the Royal Naval Division (Drake Battalion) in the second day's landing at Gallipoli, and served through that campaign as a machine gunner. He afterwards served in a patrol vessel and mine-sweeper as an A.B., taking part in many rescues of torpedoed crews and in salving boats. For these services he was specially thanked and promoted sub-lieutenant in the R.N.A.S. in June, 1917, and as such acquired considerable skill in bomb dropping and aerial gunnery. This year he was posted to the British Aegean Squadron, and was promoted lieutenant.

Lieut. GEORGE POWELL ARMSTRONG, R.A.F., late R.N.A.S., who died on July 25th of injuries received whilst flying on July 13th, was the elder son of Mr. and Mrs. Thomas Armstrong, Toronto, Canada. His age was 24.

Lieut. W. F. BEACHCROFT, M.C., R.A.F., who was killed in an aeroplane accident on July 21st, was the only son of Mr. and Mrs. Beachcroft, of Natal, South Africa.

Sec. Lieut. HORACE EDGAR BRAY, R.A.F., who was accidentally killed in England on July 9th in a collision in the air, was the youngest son of the Rev. H. E. Bray, Rector of St. John's Church, Thamesford, Ontario. He was educated at the Collegiate Institute, Galt, Ontario, and enlisted early in 1915, at the age of 18. He served with the Canadian Light Horse until wounded at the Battle of the Somme, in September, 1916. He received his commission in the R.F.C. in December, 1917, and was completing his training as a scout pilot.

Lieut. LIONEL THEODORE CLEMENCE, R.A.F. (late R.N.A.S.), who died on July 27th at Bryn-y-Mor, Camborne, Cornwall, from illness contracted on active service, aged 19, was the younger son of Herbert and Carrie Clemence, of 6, Beaumont Mansions, West Kensington.

Lieut. RICHARD MILNE COLLINGWOOD, R.A.F., who was accidentally killed in England on July 19th in a collision in mid-air, aged 21, was educated at St. Bee's School, Cumberland, and, on leaving, joined the Border Regiment as 2nd lieut. in December, 1914. He went to the front in January, 1916, and became attached to the R.F.C. as an observer for about a year. Returning to England, he qualified as a pilot in June, 1917, and for some time he had acted as an instructor. He was, in fact, carrying out those duties when the accident happened which caused his death. His elder brother, George Albert Collingwood, also a lieutenant in the Border Regt., was killed at the landing at Suvla Bay in Gallipoli on August 7th, 1915.

Capt. CHARLES DAVID DANBY, M.C., R.A.F., who was killed in an accident while flying on July 18th, aged 31 years, was an only child, and was educated in France, at St. Paul's School and the School of Mines. He held an engineering appointment in Egypt under the Government when war was declared, and at once came home and obtained a commission in the Royal Tyne Engineers. He was transferred in the spring of 1915 to the R.F.C., and was soon sent to the front. He was one of the first to take photographs over the enemy lines, and was awarded the M.C. for a daring flight, from which he returned with valuable photographs. Invalided home through typhoid about a year ago, he had since been teaching and organising. He spoke French, Spanish, and Arabic, and was a fine boxer.

Lieut. GEORGE FREDERICK DELMAR-WILLIAMSON, Royal Highlanders (Black Watch) and R.A.F., who was accidentally killed while flying on July 12th, aged 19 years, was the only son of Frederick and Emily Delmar-Williamson. He served in France in 1917, until invalided home.

Sec. Lieut. A. NOEL EALAND, R.A.F., who was accidentally killed on July 15th while flying at the front, was the son of the late Charles Winn Ealand, of Kirkby Lonsdale. He was educated at Shrewsbury and became a solicitor. At the time of his death he was in partnership at Thetford, Norfolk. After serving for two years with the Red Cross in France, he obtained a commission in a Dragoon regiment, but subsequently transferred to the R.A.F. Wireless Section. He married, in 1910, Miss E. Augusta Horwood, daughter of Lieut.-Col. T. Horwood, of Aylesbury, and leaves a widow and three sons.

Capt. BARRINGTON CHADWICK QUINAN, Canadians, attached R.A.F., who died of pneumonia at Maghull, Liverpool, was the youngest son of Mrs. W. L. Chadwick, Newlands, Glasgow.

Married.

[COLONEL EDWARD FEATHERSTONE BRIGGS, D.S.O., R.A.F., son of the late Mr. William Briggs, of Clifton, Bristol, was married on July 27th at St. Michael-le-Belfrey, York, to Miss VIOLET LONG, the only daughter of Mrs. ERNEST LONG, of York. A guard of honour was provided by men of the Royal Air Force and W.A.A.C.'s employed at headquarters.

ALLAN R. CHURCHMAN, D.F.C., R.A.F., son of the late Andrew Churchman and Mrs. Churchman, of Hammersmith, was married on July 17th, at All Saints', Putney Common, to DORIS, youngest daughter of Mr. and Mrs. EDWARD GREVILLE, of Putney, S.W.

Maj. C. K. COCHRAN-PATRICK, D.S.O., M.C., R.A.F., was married on July 27th, at St. Mark's, North Audley Street, to ELLA, daughter of Mrs. SYDNEY GROSS, 55, Green Street, Park Lane.

PRIVATE HAROLD DARKE, R.A.F., and Miss DORA GARLAND were married at St. Michael's Church, Cornhill, E.C., on Thursday, July 25th.

Maj. RUSSELL WILLIAM GOW, D.S.O., D.S.C., Croix de Guerre, only son of Mr. and Mrs. William Gow, of Hoylake, Cheshire, was married on July 18th at St. Mary's Church, Beverley, to GLADYS, younger daughter of Mr. and Mrs. WILLIAM HODGSON, Westwood Hall, Beverley.

Lieut. GEORGE W. M. GROVER, R.A.F., was married on July 17th at Holy Trinity Church, Ryde, Isle of Wight, to JOSEPHINE W. (JOAN) PATTERSON, younger twin daughter of Mr. and Mrs. W. R. PATTERSON, of Sorrento Lodge, Ryde.

Lieut. WILLIAM FRANK HELLYAR, R.A.F., only son of Mr. and Mrs. William J. Hellyar, of Cavendish Road, Clapham Common, was married on July 27th at St. Saviour's Church, Brixton Hill, to "DOLLY," second daughter of Mr. and Mrs.

Death of Captain C. Gordon Bell.

It is with the greatest regret that we have to record the death of Capt. C. Gordon Bell in a flying accident, in France on Monday evening. He was one of the real pioneers, having learnt to fly at Brooklands on the famous Hanriot, "Henrietta," in 1910. He taught several others to fly on the old machine, and then went to the R.E.P. firm in France, where he quickly made a reputation as a born pilot. While with the R.E.P. firm he went to Turkey to demonstrate some machines, and had the privilege of being the first to fly across the sea of Marmora. On his return to England he flew as many machines as he could, and by the time war was declared had made practical acquaintance with over sixty different types. No matter what size machine, large or small, Capt. Bell was quite prepared to undertake its pilotage.

He was in the R.F.C. reserve and consequently when war was declared, he went on active service, until ill-health necessitated his return home. He then resumed instruction

HENRY W. CHAPPLE, of "Suffiabad," Bonham Road, Brixton Hill.

Surgeon ALEC GEORGE HOLMAN, R.N. (attached R.A.F.), second son of the late Frank Holman and Mrs. Holman, of Westbury-on-Trym, Bristol, was married on July 25th, at the parish church, Great Yarmouth, to GRACE KATHLEEN, fifth and youngest daughter of the late CHARLES N. BROWN and Mrs. BROWN, of The Elms, Southtown, Great Yarmouth.

Lieut. P. N. MELITUS, R.A.F., elder son of Mr. Harry Melitus, of 46, Holland Park, W., was married on July 27th at St. Ambrose Church, Bournemouth, to HEBE MADGE, eldest daughter of the late Mr. B. B. EVANS, J.P., of "Fair Elms," Hatch End, Middlesex, and Mrs. EVANS, Craigalea, Alum Chine, Bournemouth.

Lieut. C. H. VERNON, R.A.F. Medical Service, son of Maj. Vernon, T.D., F.R.C.S., and Mrs. Vernon, of Bournemouth, was married on July 25th at Westminster Chapel, Buckingham Gate, to EDITH, elder daughter of Rev. and Mrs. A. E. ABEL, of "The Manse," Godalming.

To be Married.

The engagement is announced between Capt. WALTER E. G. BRYANT, Royal Fusiliers, attd. the R.A.F., eldest son of Mr. and Mrs. W. E. Bryant, of Streatham Common, and Miss ELSIE JUANITA FISHER, younger daughter of Mr. and Mrs. FISHER of Blundellsands, and Willaston, Chester.

The marriage arranged between Capt. H. W. BUNBURY, the Suffolk Regiment and R.A.F., and Miss MARGARET MURRAY will take place at St. James's Church, Piccadilly, on August 24th, at 2.30.

The engagement is announced of Lieut. JAMES CHARLES FAIRFAX, R.A.F., of Milton Road, Hanwell, and Miss MILDRED COLLETT IRWIN, of Fowler's Walk, Ealing.

The marriage arranged between Sec. Lieut. G. B. FIELDING, R.A.F., son of the late Rev. G. F. M. Fielding, Stoke Wake, Dorset, and Dover, and Esme, youngest daughter of the late OUTRAM KELLIE MCCALLUM and Mrs. KELLIE MCCALLUM, Monowai, Fleet, Hants, will take place quietly in London on August 10th.

A marriage has been arranged, and will shortly take place, between Brig.-Gen. P. R. C. GROVES, D.S.O., R.A.F., elder son of J. Groves, late of the Public Works Department, India, and MARGOT, elder daughter of the late CLAYTON GLYN, of Durrington House, Harlow, and Mrs. GLYN.

The engagement is announced between Maj. KEITH R. PARK, M.C., C. de G., R.F.A., and R.A.F., son of Prof. J. L. Park, F.G.S., B.Sc., of Aberdeen and New Zealand, and DOROTHY MARGARITA (DOL), daughter of Maj. and Mrs. WOODBINE PARISH, of 2, Stanhope Street, Hyde Park.

The engagement is announced of Lieut. HAROLD PEARSE, R.A.F., son of the late Walter Pearse, and of Mrs. Pearse, of Newcastle-on-Tyne, and GWENDOLINE GERTRUDE ALLEN, younger daughter of Mr. and Mrs. ALLEN SIMPKIN, of Endcliffe Cottage, Sheffield.

A marriage has been arranged, and will take place at the beginning of September, leave permitting, between Capt. WILLIAM STORMONT, R.A.F., and BETTY, youngest daughter of the late WILLIAM HAZELL and Mrs. HAZELL, Broughty Ferry, Scotland.

The engagement is announced of Capt. GUY ERNEST WILLIAMSON, R.A.F., second son of Mr. and Mrs. S. T. Williamson, of Beechcroft, Chislehurst, and GLADYS NATHALIE, second daughter of Mr. and Mrs. W. M. JOHNSON, of Barnfield, Bromley, Kent.

and experimental work, rising to the rank of temporary Major. Towards the end of last year he was invalided out of the Army and returned to his old work of testing new machines, and was, up to the time of his untimely death, so engaged with Messrs. Vickers, Ltd.

The Death of Mr. Boyle.

At an inquest held on Saturday last on Mr. Edwin Boyle, aircraft designer, it was stated that he ascended in an aeroplane for the purpose of demonstrating a parachute. He got out on a specially constructed platform, and at a height of 400 ft. jumped off. Owing to a hook breaking the whole parachute casing gave way, and the parachute failed to open. Boyle fell to the ground and was instantly killed.

Evidence was given that the hook had been tested to a ton dead weight, and several tests had also been made with it by the manufacturers, and everything found to be satisfactory.

AIRSHIP SHEDS AND CELLULOSE CONTRACTS.

The following are extracts relating to aviation from the fifth report of the Select Committee on National Expenditure which has just been published. We comment on the question of cellulose contracts on p. 847.

Airship Constructional Shed in Lancashire.

In the latter part of 1916 it was decided to build a shed for the construction of large rigid airships, together with a village for the employees, in Lancashire. The scheme involved a total expenditure of nearly £800,000. In October, 1917, after about a hundred houses had been built, railways and sidings constructed, and the shed itself begun, the work was stopped. It was supposed by many people in the locality and elsewhere that this was because the site had been found to be unsuitable or the enterprise itself unnecessary, and that this was a case of waste of public money due to lack of sufficient foresight, comparable to the abandoned aerodrome at Loch Doon. One of our Sub-Committees has made close inquiry into the matter, and is glad to find that this is not so. The suspension of the work has been due to the shortage of steel which has arisen since the scheme was approved, and to what is regarded as the more urgent need for other purposes for the steel available. The Admiralty authorities remain of opinion that the shed is needed, and desire that, when the materials are available the construction should be resumed. The question whether priority was rightly given to other demands for steel at the expense of this undertaking is not one that falls within our province. When the conditions would render possible the resumption of the work it will no doubt be considered whether, after the long interval that has elapsed since the scheme was approved, and in view of the probabilities in relation to the duration of the war and to the developments in aerial warfare, the need still remains.

Contracts for Cellulose Acetate.

Our Sub-Committee on the Ministry of Munitions made enquiries early in October, 1917, regarding the arrangements made by the Ministry for obtaining cellulose acetate, and shortly afterwards obtained certain papers on the subject. It was, however, only after the issue of the first Report of the present session that they were free to devote the prolonged attention to the matter that its extreme complexity demanded. They have held 17 meetings, examined 34 witnesses, and considered carefully such papers as are available. The personnel engaged in the matter have constantly changed, and certain of the more important persons concerned are absent in America or elsewhere. The Sub-Committee are, however, confident that they have ascertained the principal features of the case.

Cellulose acetate is the principal ingredient in dope for aeroplane wings, requiring for that purpose to be mixed with certain solvents which are also in question in this enquiry. It is also used in film form for wind screens for aeroplanes, &c., its main value for both these purposes lying in its non-inflammable character. It is employed for a vast number of peace-time products; and by-products in its manufacture are of importance, both in war time and peace. In the manufacture of cellulose acetate the principal ingredients are paper or pulp and acetic anhydride.

The Sub-Committee were led to make enquiry in the matter on account of reports which reached them that the Ministry were dependent for their supplies of this material on one firm who had been guaranteed the refund of excess profits of the whole capital expenditure incurred by them during the war, that the capital expenditure of the firm was on an enormous scale and their deliveries unsatisfactory, and that all other offers to manufacture had been refused. Since the early part of the current year the Ministry have themselves been in negotiation with the Company. The Sub-Committee did not, however, think fit to discontinue their enquiries on this account.

War Office Negotiations with Cellonite Company, 1915.

In the early days of the war cellulose acetate was not manufactured in England. The principal sources of supply, apart from Germany, appear to have been the Usines du Rhone, at Lyons, and the Cellonite Company, Basle. Private manufacturers in this country obtained it from either of these two sources, but the War Office do not appear to have obtained it direct from the Usines du Rhone until late in 1915, after which date, however, the reports uniformly show that the product from those works was regarded as superior in quality to that of the Cellonite Company, Basle.

Enquiries were made by the War Office early in 1915 regarding the possibility of manufacturing cellulose acetate in England. After preliminary negotiations with several companies tender forms were issued to three firms in July, 1915, for 100 tons of cellulose acetate to be manufactured in this country, the manufacturers to state on their tender form to what extent the ingredients would themselves be manufactured here. Of the three companies invited, the Cellonite Company of Basle alone submitted a tender. No tender was issued to the Cellon Company of London, which was in touch with the Usines du Rhone and other French experts, although they had been in communication with the War Office and had put before them their view regarding the superiority of the du Rhone product, which they were themselves using for dope.

The Cellonite Company of Basle submitted a tender in which they undertook to manufacture in England within six months, but reserved the right to supply up to 50 per cent. of the total quantity required from their works in Switzerland. They did not state, so far as the Sub-Committee are able to discover, to what extent the ingredients for the cellulose acetate would be manufactured in this country, though there would seem to have been some understanding that the most important and expensive, namely acetic anhydride, would be made here. Careful examination fails to afford any corroboration of the statement made to the Sub-Committee by the Officer in charge of the Supply Department at the present moment, that the original conditions on which the contract was placed with the Company were "that it should be self-supporting and not dependent on overseas shipment for any product required in the production of cellulose acetate or solvents producing dope from that cellulose acetate." The importance of this misunderstanding on the subsequent history of the contracts with this Company, and on the successive steps by which it enlarged its works until they reached their present enormous magnitude, cannot be over-estimated, and it is essential to record, at the very outset, that there is no ground whatever, so far as the Sub-Committee can ascertain, for the belief that any such requirement was contained in the original contract.

The Cellonite Company's tender of July, 1915, was accepted by wire on the 19th July, and negotiations immediately followed for the institution of the required manufacture in England. The representative of the Swiss Company, Dr. Camille Dreyfus, at once raised the question of the effect upon the undertaking of possible excess profits taxation, and asked for some assurance that it would not be applied to his new venture. This question was referred by the Contracts Branch, through the Director of Military Aeronautics, to the Finance Branch and met with an absolute refusal, which was communicated to Dr. Dreyfus. Negotiations were, therefore, taken in hand for devising some alternative method of financial assistance to the new Company, which was to be formed on a small scale for the purpose of taking over the Satey Celluloid Company's works near London, and manufacturing there the required product. These negotiations were apparently concluded in September, 1915, so far as the War Office was concerned, by a letter confirming an interview with the chief financial authorities of the War Office, at which agreement appears to have been reached with concessions on either side. On the 15th November, 1915, a minute by the Director of Contracts records that Dr. Dreyfus had informed him on that day that he hoped to begin manufacture in this country in about a fortnight. This statement appeared inexplicable to the representatives of the British Cellu-

lose Company who gave evidence, but, whether based on a misunderstanding or not, some such assurance may well account for the inaction of the War Office, so far as the available records show, in the whole matter between the settlement of the financial terms in September and the following March.

British Cellulose Company—War Office Agreement, 1916.

In March, 1916, Sir Trevor Dawson, Managing Director of Vickers, Limited, and Colonel Grant Morden, on the staff of the Canadian Minister of Militia, approached the Assistant Financial Secretary of the War Office with a proposal to manufacture cellulose acetate by Dr. Dreyfus if exemption from excess taxation could be obtained for five years. The proposal contemplated raising capital to the extent of £120,000 and the erection of a factory near Manchester with a considerably extended programme of output, which was to begin within four months of the commencement of the building. Reference to the Contracts Branch satisfied the Assistant Financial Secretary that it was still important to manufacture the material in this country, and enquiries were accordingly made unofficially from the Treasury regarding the feasibility of granting the concession asked for. At the same time Sir Trevor Dawson wrote to the then Chancellor of the Exchequer, Mr. McKenna, asking for his sympathetic consideration of the enquiry which was being addressed to the Treasury by the War Office. Mr. McKenna replied on March 18th, quoting in his letter the terms of the reply sent on the 10th March by the Treasury to the Assistant Financial Secretary of the War Office:—"I fear that it would not be possible to promise the firm any exemption from taxation, but we have told the War Office that if it is absolutely essential to give Dr. Dreyfus the substance of what he asks, we consider that the best arrangement would be to promise to pay the firm by way of subsidy year by year, for a period of five years, a sum equal to the difference between the income tax they will have paid and the income tax which would have been payable by them if they had been charged with tax on the debenture interest paid and dividends distributed."

It would appear that this correspondence between the Chancellor of the Exchequer and Sir Trevor Dawson, which was shown by the firm to the Contracts Branch, had considerable effect upon the subsequent negotiations. According to the evidence given to the Sub-Committee, which is largely borne out by the documents, the Contracts Branch at this date could not support the application for exceptional concessions on the ground of the necessity for instituting this factory in this country at the moment. If it was required at all, the concession could be desirable only on considerations of general after-war trade. It is by no means clear that this attitude was due to the fact that supplies were now obtained by the War Office from the du Rhone Company, or to the possibility of obtaining manufacture in this country from other companies, working in association with them, if similar concessions were granted, but in any case the Contracts Branch appear to have regarded the concession as having been already granted by the Chancellor of the Exchequer to the firm, and, therefore, treated it as *chose jugée*. The Finance Branch, however, continued to act as though the War Office were still dependent on the sole source of supply at Basle, and after obtaining an assurance from the Company on March 24th, 1916, that they would manufacture for war purposes exclusively during the war, they formally put forward to the Treasury an application for consent to the refund of the amount expended on plant by the Company up to a maximum equivalent to the excess profits duty actually charged in respect of each year's working during the war.

The Treasury agreed on the 3rd June, 1916, to the grant of the special terms proposed by the War Office on the conditions proposed by them and on the strength of the War Office assurance that the importance of the matter justified such an exceptional proceeding. The conditions were that during the war the Company would manufacture exclusively for the purposes of the War Department and the Admiralty, and quote reasonable prices for all orders that might be placed with it by any Government Department or by any agents or contractors to any Government Department. This decision was communicated immediately to the Company, who, however, asked that the period of refund should not depend upon the duration of the war, but should be fixed as five years, that "reasonable prices" should be understood to mean prices discussed and mutually agreed upon between both contracting parties, and that, after the demands of the War Department and Admiralty were satisfied, no objection would be taken to their supplying private manufacturers who might be engaged in the manufacture of products also required for war purposes or otherwise. These further requests were put forward to the Treasury, who attempted to safeguard the public interest by securing, in the first place, a limitation of the proposed refund to the amount of expenditure on plant erected, with the approval of the War Office, for the purposes of Government Contracts, and later, when the firm failed to agree to this, the limitation of private orders, during the war, to orders from Government contractors for supplies required by the Government, both orders and prices to be subject to the approval of the Army Council. Finally, on the 17th November, 1916, the decision of the War Office was communicated to the firm. In this letter the War Office guaranteed to refund to the Company the capital expenditure incurred by them during the war upon the establishment of the plant for the manufacture of cellulose acetate and allied chemical products, up to a maximum equivalent to the excess profits duty actually charged in respect of each year's working during a period of five years from the formation of the Company, on condition that reasonable prices were quoted for all orders, that orders were taken during the war only from Government Departments, directly or indirectly, and that after the war Government orders at approved prices should have priority.

The Sub-Committee examined the Assistant Financial Secretary of the War Office with regard to this correspondence. Questioned regarding the absence of any limit to the amount of capital expenditure covered by the promised refund, he strongly maintained that throughout the correspondence the War Office had in view solely the plant which was then being erected and the one contract for 100 tons of cellulose acetate which was then in question. It was his view that the effect of this correspondence would be merely the refund to the Company of any excess profits which might be earned out of that contract for the purpose of meeting the capital expenditure incurred with relation to it. In any further contract not involving capital expenditure regard would have to be paid in fixing the price to the fact that the capital expenditure had already been wiped off out of the original contract, while in any further contract which might involve capital expenditure the whole question of refund from excess profits would have to be considered afresh. He further stated that one of the main reasons for preferring a procedure by means of refund to remission from taxation was that the former method secured that the Spending Department should not lose sight of the concession. Whether the correspondence bears out either of these contentions or not—and with regard to the former, at any rate, this would appear to be a question of legal interpretation which the Select Committee cannot profess themselves competent to decide—it is noticeable that in all subsequent negotiations with the Company both of these considerations were allowed to fall into neglect.

Before the Treasury were formally approached by the War Office in March, 1916, the British Cellulose Company was formed in this country for the purpose of erecting the necessary works and carrying out the contract with the War Office, and the capital stated to be required for the undertaking, namely £120,000, was said to have been found. The programme of manufacture, which was promised to begin within four months from the date of the commencement of building, was two tons daily of cellulose acetate, five tons of acetic anhydride

(replaced in the firm's letter of March 24th by an equal amount of methyl acetate), and half a ton each of triacetate, triphenyl phosphate and aspirin. On the 24th March the firm informed the War Office that they were proceeding with the ordering of the necessary plant, and in subsequent correspondence reference is made to expenditure actually incurred. A building licence was applied for in August, 1916, and was granted, the expenditure involved being stated at about £40,000. In the previous months, however, namely July, 1916, Dr. Dreyfus had written to the Contracts Branch of the War Office saying that he hoped to begin the manufacture of cellulose acetate at the end of the next month.

During practically the whole period of these negotiations offers to manufacture were made by other companies. The Admiralty were anxious to widen the sources of supply, partly in order to secure competition in manufacture and partly owing to dissatisfaction with the cellulose acetate which was being imported from the parent firm at Basle. Two English companies, the Cellon Company, who had already approached the War Office, and the United Alkali Company, got into touch with the Usines du Rhone and offered to manufacture in England. The Cellon Company approached the War Office direct in May, 1916, on the advice of the Admiralty. They were told that if they liked to put up a plant at their own expense they could tender for the next requirements of the War Office for cellulose acetate. The United Alkali proposal was put formally before the War Office by the Admiralty in July. In reply the Admiralty were informed that the British Cellulose Company would commence output about the end of August. Their expenditure, with special concessions from the Treasury, was based on an anticipated output equal to three times the total estimated requirements of the War Office and the Admiralty together. Consequently, if an order were given to another firm sufficiently large to recoup them for their capital expenditure, the discontinuance of the order to the British Cellulose Company would probably be involved, which would be contrary to the understanding on which they had undertaken the erection of their factory. The United Alkali Company were, therefore, put off by the Admiralty according to the firm's statement on the grounds that the British Cellulose Company would be producing the required cellulose acetate within two months, which would, of course, effectually prevent them from competing, their offer being to erect their plant in from six to nine months.

The hopes held out by Dr. Dreyfus that the cellulose acetate would be produced at the new works by the end of August proved little better founded than his statement in November, 1915, that supplies would be forthcoming within a month. Although, according to the contemporary Admiralty records, the accuracy of which, however, is questioned by the firm, Colonel Grant Morden informed the Secretary on the 8th November, 1916, that the Company were in a position to begin manufacture of cellulose acetate at a week's notice, and on the 15th February, 1917, Sir Trevor Dawson described the Company to the Fifth Sea Lord and the Civil Lord as the only one in England producing cellulose acetate in any quantity it was not until April, 1917, that any supplies were manufactured, and not until July, 1917, that the material was forthcoming in quantity. On the 29th September, 1916, a month after the date when supplies were expected, the Admiralty again wrote to the War Office suggesting that another source of supply for cellulose acetate should be found. To this the War Office replied on the 9th October that they would have no objection if the Admiralty, notwithstanding the difficulties mentioned in their former letter, arranged their own source of supply. They added that if the contract entered into with any new firm were similar to that made with Dr. Dreyfus, namely, for the supply of a definite quantity, not exceeding 100 tons, arrangement could no doubt be made for a portion of that quantity to be taken over by the War Office. It is difficult to reconcile this with the programme which the British Cellulose Company had put forward, but in any case the Admiralty contented themselves by relying entirely upon the French product, until later they agreed to obtain all supplies from the Department of Aeronautical Supplies.

Ministry of Munitions.—New Contracts.

At the end of February, 1917, Aeronautical Supplies were taken over by the Ministry of Munitions. Cellulose acetate was still being obtained partly from Basle and partly from the Usines du Rhone, that from Basle continuing to give trouble in spite of an alteration in the specification. The original contract for 100 tons, so to be supplied from Switzerland, had been superseded, after some 75 tons had been imported from Switzerland, by a new contract for 40 tons on the new specification to be manufactured in England. The principal dope manufacturers, the British Emallite Company and Cellon, were using as much as possible the du Rhone product, and the former, together with the United Alkali Company, were endeavouring to introduce the du Rhone manufacture into England. No supplies were forthcoming from the new works, where expenditure, entirely unchecked, had been continuing far beyond the original capital.

In their formal application of 24th March, 1916, for special terms, the British Cellulose Company offered to the War Office an output of some five tons a day of methyl acetate, which was then being spoken of as a possible solvent for use in dope. An unfavourable decision having been obtained upon it, reference to its use was struck out of the first letter of the War Office to the Treasury, but as early as 2nd October, 1916, Dr. Dreyfus informed the Air Board, that his Company was installing a large plant for the purposes of manufacturing this material, and wished to know whether its use as a solvent was permitted. On the 16th April, 1917, he informed the Ministry of Munitions that his firm would, within a very short time, be in a position to manufacture several tons a day of methyl acetate, as they had at the present moment supplies of all raw material with the exception of methyl alcohol, which they had reason to believe they could obtain without difficulty. Consequently he asked for orders. This was followed at an interval of two days by a letter containing an apparently separate proposal for the installation of a plant and the manufacture of carbide of lime, synthetic acetic acid, pure acetone and ethylic alcohol (being both solvents and constituents of the cellulose acetate), which could be carried out within three months time, provided that the necessary priorities were received and orders were given sufficient to justify the expenditure. The two proposals were considered together, and in June, 1917, an order was placed for 2,500 tons of methyl acetate or acetone (involving about £450,000), delivery of the former to be at the rate of three tons per week to begin in four weeks, reaching 24 tons in 18 weeks, delivery of the latter to be at the rate of 20 tons per week to begin in 20 weeks.

Until May, 1918, no methyl acetate was delivered to the Ministry from this factory, although the firm stated that they were manufacturing it from acetic acid in a letter written on September 27th, 1917, to the Department of the Ministry which had just announced its control of the latter material. The delay of over nine months in the production of methyl acetate from materials manufactured elsewhere was explained to the Sub-Committee as due to the fact that it is made on the acetic anhydride plant. Acetic anhydride is an essential ingredient in cellulose acetate; methyl acetate could, therefore, only have been made at the expense of cellulose acetate. The demand for acetone has been withdrawn and since no carbide of lime or acetic acid has yet been produced, the methyl acetate is being made entirely from materials supplied by the Ministry.

When the prices under this contract were under consideration a question was raised within the Ministry concerning the inclusion of the capital expenditure involved within the terms of the concession made as to freedom from Excess Profits taxation, and it was held by the officials concerned that the terms of the concession would not cover these new proposals, but the point was not raised by the firm and no decision to that effect was communicated to them. It is noticeable, in view of the original intention (*see above*), that the concession is now spoken of as being one of exemption and not of refund.

At about the same time, namely, on the 4th May, 1917, Dr. Dreyfus wrote that the works were now almost completed for cellulose acetate, and asked

for a larger order than that for 40 tons mentioned in above. A new contract was placed on the 5th June for 25 tons a month, with three months' notice, the price showing a slight reduction over that previously arranged. This order, though in excess of the output of the works during any month in 1917 was well within their capacity as estimated by the Supply Branch, and was not therefore regarded as in itself involving new extensions.

Doubling of Cellulose Acetate, &c., Plant.

In July, 1917, partly as a result of stoppage of imports from France, stated to the Sub-Committee to have been due to a temporary shortage of coal, the supply of dope in this country became precarious. The output of the new works was far below the promises. The works were accordingly visited by Supply Officers of the Ministry, one of whom reported on August 16th that the delay was entirely due to failure by the Ministry to recognise the merits of Dr. Dreyfus and the difficulties of his work. If properly assisted by the Ministry they would complete their programme. The Reports ends:—"With proper assistance, i.e., provision of plant items ordered by them, but hopelessly slow in delivery hitherto—loan of charge hands from our chemical plant, assistance of our experienced chemists at the right time—and advice from certain selected engineers in the employment of the Ministry of Munitions, they can deliver two tons daily in one month to six weeks from now and four tons in two to three months."

In examination by the Sub-Committee the Supply Officers reaffirm this statement that the delay in production was due entirely to the low priority which the firm received for their orders. The Officer in charge of the Priorities Branch entirely combats this assertion. In his evidence he said that, in view of the statement of the Supply Branch, he had caused a special enquiry to be made into this case, and after following up the orders for plant and material, not only to contractors but also to their sub-contractors, he was able to show them that the delay was not due to the low priority but to lack of organisation and absence of interest on the part of manufacturers in the orders of a company concerning which they knew nothing. At a special conference on 8th September, 1917, this conclusion was generally accepted by the Supply Branch, and the demand for a floating Priority I was withdrawn. Such a priority would have given them a general precedence over practically all other war work. From this date, however, every possible assistance, including the advice of the chemical experts of the Ministry and the presence of a Ministry's representative on the Works, was given to the firm. Indeed, the Officer in charge of Supply states that he has been quite satisfied with the progress made. Yet, how little this progress complies with the forecasts made by the Branch themselves is shown by the fact that, instead of producing two tons a day at the end of September, they only reached that output seven months later, in April, 1918, and have still much ground to cover before they reach the output promised for the end of 1917.

On the strength of these promises, the Supply Department state that they were satisfied that, notwithstanding all the advantages of securing an alternative source of supply, the quickest and indeed the only way of securing the required quantities of cellulose acetate was through the British Cellulose Company. Accordingly in August, 1917, the firm were instructed to double their plant for cellulose acetate, and a further contract was given to them for a total quantity of 700 tons. All other proposals to manufacture were refused or ignored.

How far the financial consideration that the cost of these extensions might be charged to the State was kept in view, in considering alternative suggestions of manufacture, the Sub-Committee find it difficult to determine. The Director of Contracts in the Department of Aeronautical Supplies was the same officer who had conducted all the negotiations with regard to these commodities at the War Office, and though he shortly afterwards gave up this work he was present throughout all the preliminary negotiations. The officers in charge of Supply were, until July, also the same as those who had dealt with the matter at the War Office. Their successor informed the Sub-Committee that, although aware unofficially of the agreement regarding the refund of capital expenditure, he had not seen its actual terms until a few days before he met the Sub-Committee. His subordinate officer, who was more directly concerned with this particular manufacture, and made the report referred to above, showed himself, as late as the 19th March, 1918, totally misinformed of the position in the minute which he put forward to the Director of Supplies combatting the arguments of the Technical Department in favour of widening the sources of supply. The same official, in a minute on the same subject of December, bases himself very largely on financial reasons for the rejections of the officers of other firms. With both these minutes the Director of Supplies stated his agreement without any correction on the financial point; and, so far as the Sub-Committee can discover, the offers for alternative manufacture were never put before the Contracts or the Finance Branches.

On the other hand, the question whether the concession granted to this Company secured any special supervision of their capital expenditure in the interest of the State, admits of a more complete answer. Not only was there no special supervision, but there has been even less than in the case of an ordinary controlled firm. No supervision whatever was exercised by the War Office over the erection of the buildings and plant necessary for the execution of the original contract for cellulose acetate. When the contract for solvents was placed in June, 1917, no estimate of the probable capital expenditure for the manufacture of acetic acid, &c., was asked for or given. On August 13th, 1917, the firm wrote to the Ministry regarding the extensions necessary, both for this contract and for doubling their cellulose acetate plant in accordance with the instructions of the Supply Department, and applied for a loan of £200,000 towards the erection of a power plant. Incidentally they stated that hitherto they had asked for no financial assistance. The letter was passed by the Contracts Branch to the Munitions Works Board, who were, as was stated in the First Report of the current session, the body specially charged with the investigation of all proposals for constructional work to be done by or for the Ministry (specifically including work to be paid for in whole or in part out of moneys advanced by or on behalf of the Ministry), and for supervising erection after sanction. Although the Controlled Establishment Division of the Ministry were in negotiation with the firm from February to December, 1917, for their control—one of the causes of delay being the Company's objection that control might prejudice their special agreement regarding the refund of capital expended—the Munitions Works Board held that, as the firm was not controlled and no financial assistance appeared to be asked for, it lay outside their jurisdiction. If financial assistance were requested, the Board would need more details. The papers were never returned to them. The loan was granted to the firm in the same month by the Finance Department who explained to the Sub-Committee that in not referring to the Munitions Works Board they relied upon the necessity for obtaining a building licence and priority to bring the proposals for expenditure before that body in due course. Priority was obtained by the Supply Department direct. Certain applications for building licences involving, with plant, an expenditure of some £750,000 were made in the following months, and ultimately referred to the Munitions Works Board in January, 1918, and by them to the Works Construction Sub-Committee of the War Cabinet. When these applications had been passed by both bodies the Munitions Works Board learnt from the Supply Branch that the extensions were the same as those referred to above which, they said, had been "sanctioned" in August, 1917, and further buildings being mentioned, which involved a very large quantity of steel, details of these were asked for by the Munitions Works Board in February before communicating any approval to the firm. Apart from the power plant which was separately dealt with, these details were only received by the Supply Branch at the end of May, six weeks after their evidence was taken by the Sub-Committee, and they are stated to be now receiving the attention of the Munitions Works Board. Consequently no financial sanction whatever has been issued for these extensions which have been

proceeding for nearly a year and are stated to involve in all an expenditure of over £3,000,000. Not even a building licence has been granted since August, 1916, and the only authorisation which could be quoted by the firm is a letter from the Controller of Supplies of the 29th January, 1918, marked "private and confidential" and bearing no reference number, which told them to proceed with their power house, carbide and acetic acid factory to the full extent to make their plant self-supporting for acetic acid, both for the cellulose acetate and for solvent, and asked them for their estimate of output in order that the Ministry's estimated requirements might be communicated to them. In giving instructions for this letter to issue the Member of Council concerned assumed, as he informed the Committee, that as all the buildings were proceeding and the plant delivered, all the necessary approvals had been obtained.

The Controller of Aeronautical Supplies claimed in his evidence before the Sub-Committee that he was in no way concerned with the financial aspect of these extensions. It was not clear whether he had seen the proposals; if he had, he had but glanced at them superficially. In any case he had only received the full schedule a month ago, and he was not concerned with the amount to be expended upon it. The Sub-Committee find this attitude inconsistent with his rejection of alternative offers without reference to the Contracts or Finance Departments, and with the absence of any reference to the financial authorities of far the greater part of the extensions, until long after the expenditure on buildings and plant had been incurred. Apart from this, the Sub-Committee are satisfied from his evidence and from the absence of any series of detailed and dated estimates of proposed output, construction, and expenditure that his department either failed to exercise or were not in a position to exercise, any supervision before hand over the lay out and construction involved at the different dates. Indeed, the letter quoted in the previous paragraph instructing the firm to proceed with their whole programme of extensions is admittedly written in ignorance of the proposed capacity. Thus, without any supervision on the part of the Supply or any other department over the correspondence between the extensions involved and the capacity required, enormous capital expenditure has been indirectly incurred by the Ministry; since until June, 1918, they were under an obligation to refund this expenditure so far as it was covered by the excess profits earned in five years, and now they have to bear a very large proportion in the cost of the product in the form of depreciation. Nor can any consideration of urgency be advanced in this case, for the proposals were all put forward in outline by the company to the Treasury as early as October, 1917, when they applied for sanction to an increase of capital.

In March, 1916, as has been stated above the British Cellulose Company was registered. The War Office were informed that the capital stated to them to be necessary, namely, £120,000, would be subscribed immediately. A private Company was registered on 18th March, 1916, with a nominal capital of £4,000, in 160,000 6d. shares, of which one-half were held by Dr. Dreyfus, about one-eighth by Vickers, Limited, and one-fourth by the Prudential Trust of Canada, who subsequently, in November, lent £120,000, without Treasury sanction, in a series of debentures secured by mortgage. These debentures were taken up by the shareholders of the Company. Treasury sanction was obtained for the issue of further debentures in January, 1917, up to a limit of £75,000, £60,000 of which appear to have been taken up. In October, 1917, the firm sought permission from the Treasury to form a new Company, with a share capital of 2,000,000 £1 shares and a debenture issue at 7 per cent. to the same amount. Except for 555,000 shares, which were to be paid for in full by Messrs. Vickers, Nobels and the Chilworth Gun Powder Company, the whole of the ordinary share capital was to be distributed among the existing shareholders in return for their interest. The debentures were to be issued publicly. Permission was refused by the Treasury in November. On the firm protesting that they would be obliged in consequence to abandon their extensions, which were vital for the prosecution of the War, the Treasury stated that they were prepared to reconsider the matter on learning that the full programme of extensions (then estimated to cost about £2,000,000) had been formally authorised by the Ministry. To this the firm replied that they had been granted the highest priority. Three months later, in March, 1918, a private Company was registered under the name of The British Cellulose and Chemical Manufacturing (Patent) Company, Limited, with a share capital of £3,500,000 in £1 shares. Of these it appears that some 455,000 are paid for in cash. Of the remainder the bulk are exchanged with the present shareholders who receive 14½ £1 shares in the new Company for each 6d. share held in the old.

Recent Negotiations.

Since early in the current year negotiations have been continuous for placing with this Company large new contracts covering the whole of the Ministry's requirements for cellulose acetate and methyl acetate with the manufacture of the ingredients, while claims were made for the revision of prices under the existing contracts. These negotiations were brought to a sudden head in June, 1918, by the Company declaring their inability to "carry on" through want of funds unless these questions were decided. An agreement was reached at the end of the month under which the original concession regarding the refund of excess profits for five years was revoked with all rights and obligations, and any claims to increases of price under the existing contracts were withdrawn. On the other hand the Ministry undertook to make loans at interest to the Company to cover a proportion of their approved war capital expenditure, and placed contracts with them of the value of some £3,000,000 on the basis of cost plus a fixed sum for profit and a bonus for economical production. A housing scheme for the operatives at the new works has been put forward and is under consideration. There are also in contemplation new manufactures, including transparent sheets and completed dope.

Present Situation.

The position at the present moment, is, therefore, that the Ministry of Munitions has made itself entirely dependent upon one company for its supply of cellulose acetate and certain other products which are essential for the prosecution of the war. Since March, 1918, the import of cellulose acetate has been forbidden even to companies who have standing orders. All other offers to manufacture that substance in this country have been refused.

Capital Expenditure.—On the strength of this monopoly or in anticipation of it, immense works have been laid down by the company. The present commitments of the company were stated by them in evidence to be over £3,000,000. Their full estimate of expenditure on new factory and extensions submitted in May, 1918, is about £3,500,000. Together with their original expenditure, they had spent by June 22nd, 1918, £1,363,000. Since the original building was begun in the summer of 1916, no building licence has been issued and those for which application was made in the autumn of 1917 covered only a small fraction of the extensions then contemplated, amounting to some £750,000. A power plant has been sanctioned, but otherwise no financial sanction has been given for any of the expenditure, and details have only recently been submitted to the Supply Branch. It appears that, as was stated in evidence by the Controller of Priority, the extensions are carried out without any programme, and constant experiments, alterations and conversions take place. According to a report made by the Billing Board, who were asked to investigate the need for 1,000 houses, as proposed by the company, the firm stated that the factory was laid out with a view to the ultimate employment of some 30,000 persons. This statement was ridiculed by the representatives of the company in evidence before the Sub-Committee, who stated that when the factory was completed not more than 3,000 or 4,000 persons would be employed, either for war or peace purposes. It is quite clear that there is great uncertainty regarding even the near future of the company, and the Sub-Committee are not confident that the departments which so far have handled the matter have exercised any supervision over the layout and the expenditure.

45. Some of the items of expenditure deserve further consideration. The first unit, apparently capable of producing six tons per week of cellulose acetate (with acetic anhydride), and completed by July, 1917, was said by the firm in evidence to have cost about £350,000. The additional plant for this product, say 20 to 40 tons per week in all, is costing over £1,000,000. Two firms, Messrs. The United Alkali Company and Courtaulds, Ltd., whose offers had been rejected by the Ministry, were questioned by the Sub-Committee regarding the estimated cost of their schemes. The former gave a rough figure of about £60,000 for the complete installation of a plant capable of manufacturing acetic anhydride and turning out at least four to five tons per week of cellulose acetate. The latter gave as their own estimate £150,000 for a plant producing 40 tons per week exclusive of the cost of buildings and land, and as the estimate of a reliable authority £53,000 for a plant for 10 tons per week. The last two estimates include also the manufacture of acetic acid from imported carbide. Multiplication of the plant for an increase in output would cost proportionately less. The Committee consider that these estimates which were made some time ago should be considerably increased to meet present conditions, but even so the disproportion between them and the expenditure of the British Cellulose Company is very striking.

The schedule of commitments submitted in October, 1917, by the company to the Treasury in support of their application for increase of capital contains an item of £400,000 for plant for making dope, sheet, and films. A schedule of extensions submitted to the Supply Branch on May 22nd includes buildings and plant for dope to the amount of £43,000, and for sheets of nearly £200,000. Work for the former is in progress with the encouragement of the Supply Branch but without reference to any other authority. The Sub-Committee ascertained that the Supply Branch invited in July, 1917, another dope-making firm to make extensions of their works, in February, 1918, instructed them to complete their plans as for a national factory under their management, but finally on March 13th, 1918, rejected the whole scheme on the ground that the existing facilities would meet their requirements. Although there may be advantages in making dope where the raw materials are manufactured, the immediate change of policy by the Supply Branch without any consultation with the Finance Branch or the Munitions Works Board was not satisfactorily explained to the Sub-Committee. It is not clear whether the proposal for the manufacture of celluloid sheets is being carried out, but the Sub-Committee have learnt that there is already capacity for this purpose which has been, and is still, lying idle, owing to the impossibility of obtaining cellulose acetate.

Delays in Output.—The consistent delay in the completion of the works and the commencement of output has already been sufficiently dealt with. Had the offers of other manufacturers been accepted it is probable that the Government would have obtained what they required, not only at less expense but also more quickly. The United Alkali Company were put off in August, 1916, and again, in association with the British Emailite Company, in July, 1917, by the requirement that their proposed factory must be completed within three months. Output from the first unit of the British Cellulose factory, as has been said, did not mature for a year from the first date, and the doubling of the plant, which was in question in the summer of 1917, has not yet matured, in spite of the fact that since that date the firm has received assistance by way of priority to an unusual degree. Delay in production has not proved disastrous, partly because temporary substitutes have been utilised, but chiefly because the requirements were over estimated. If at the present moment the quantity received is sufficient, as is stated by the Controller of Aeronautical Supplies, it is evident that the quantity anticipated would have been far too great.

It is no doubt true that delays in manufacture are due in the case of this factory, as in every other, to lack of material and labour, and it is not inconceivable that other Departments of the Ministry may not have given the British Cellulose Company at one time as much assistance as they desired. But by this time such delays must be expected. Had detailed proposals for the extensions been insisted upon, more accurate forecasts might have been formed by the Ministry; and it is largely through acceptance of promises which were not based on detailed proposals and optimistic statements of the progress made that all competition was eliminated.

Efficiency of Manufacture.—The Sub-Committee have no means of estimating the economy or otherwise of manufacture since in the first place, there are no figures of efficiency; and secondly, even if there were, there is no other factory in Great Britain with which to compare them. Hitherto no more supervision has been exercised over the efficiency and the economy of manufacture than over the capital expenditure incurred, and, in view of the claims made for the secrecy of the process, investigation into these matters would appear to be very difficult.

Quality of the Product.—With regard to the quality of the cellulose acetate produced there is a marked divergence in the evidence. The Technical Branch, the Inspection Department and the officials of the Royal Aircraft Factory, where, besides laboratory experiments, the manufacture of dope is carried on, consistently describe the material as unsatisfactory. Although they agree that there has been an improvement in the quality during recent months, they hold that it is still much below the proper standard, and indeed, markedly inferior to the product of the French Company, les Usines du Rhône. Constant rejections would have occurred had there not been so great a shortage. They do not contend that its defects impair the efficiency, for present purposes, of the dope made from it; but they hold that its variability makes it necessary to subject each sample to a number of tests before it can be mixed with the other ingredients in order to make dope, and thus causes expense and impedes the manufacture of a standard dope. Further, its low degree of solubility causes considerable waste of valuable solvents and increases the labour, time and cost of dope manufacture. On the other hand, the Supply Branch state that since the factory has come into production they are quite satisfied with the quality of their product, and they assert that no complaints have reached them. The Sub-Committee are quite unable to understand this statement. Apart from other evidence, for several months the case has been argued in full before the Specifications Committee, and the modified specification which has now been expressly devised to allow some 80 per cent. of the British Cellulose Company's product to be accepted was only agreed to by the Committee, on the representation of the Supply Department, and after reference to the Director-General, as a temporary war measure. When it was so agreed, the Committee decided that it should be known as the specification for cellulose acetate Grade 2, but this was withdrawn on the representations of the British Cellulose Company, to whom, as the only manufacturers, the specification was submitted, and whose representative was present at the later meetings. It is maintained by the firm that their product is superior to all others, but the Sub-Committee are much impressed by the fact that its defects have been consistently noted, as appears from documents submitted to them, by the Government analysts since October, 1914. If it had been, as Messrs. Dreyfus assert, an easy matter for them to make cellulose acetate without the characteristics of which complaint is made, it is surprising that they did not do so at Basle in the early days of the war, when they were competing in an open market with the French Company. The only other material yet produced by the factory is methyl acetate, the manufacture of which from imported materials is understood to present no difficulties whatever, when sufficient plant is available.

Conclusions.

Until the end of June, 1918, when the original agreement with regard to the refund of capital expenditure was cancelled, the position was eminently unsatisfactory. There was no apparent limit to the expenditure which was being incurred for the purposes of executing Government orders and after-war

manufacture, except in so far as excess profits might be limited by the "reasonableness" of the price charged to the Government and their contractors by the holders of the monopoly. There was no apparent supervision over the extensions and none on the efficiency and economy of manufacture, while there were complaints of the quality of the product. On the other hand, assistance to a quite unusual degree had been granted by the Government to the company, and must continue to be so granted, in order that supplies may be obtained which are essential for the conduct of the war.

To some extent the position has been improved by the cancellation of the agreement with regard to the refund of expenditure, but, through this agreement and the refusal of the Supply Branch to consider alternative offers of manufacture in the summer and autumn of 1917, the company are already in possession of a complete monopoly. Since the new agreement has not yet been worked out, it would be injudicious to comment in detail upon its terms, but it should suffice to say that, in the opinion of the Committee, it is unfavourable to the Ministry, perhaps because they were embarrassed by the existing circumstances. Any payment based on cost is unsatisfactory when there is neither any supervision over the process nor comparison with other factories. The fixed rate of profit is based upon a cost which includes materials at a quite artificial price, and is the same whether those materials are obtained elsewhere or are made by the company themselves. Since the materials account for from 50 per cent. to 75 per cent. of the estimated final cost it is obvious that a profit which is generous when their manufacture is included in the cost is quite excessive when they are supplied by the Government. Moreover, the Ministry are obliged to pay depreciation on a generous scale, calculated on the original cost of a plant which is certainly in excess of their stated minimum requirements, and since it has been erected without any supervision by them, may well be conceived on an extravagant scale. On these considerations alone the Committee would recommend that the factory should be taken over by the Government; but apart from this, the reliance by the Government on one source for material required for the prosecution of the war, the assistance already given by the Government to the firm, and the necessity to continue that assistance in the future make it necessary that the complete control of the factory should lie in the hands of the Government themselves. Only in this way can they secure that the material will be produced in the quantity required and in the most economical manner. Above all, it is only if this factory is in Government hands that experiments towards the improvement of manufacture and alterations in the material can be introduced, and that the benefit of such improvements can accrue to the nation.

In view of these considerations, the Committee are strongly of opinion that the ownership of the factory should immediately be taken over by the Government, and the works completed as far as is necessary, and managed by them. A Technical Committee should be appointed to consider the best use of the works, and to advise upon the necessary steps for the completion of the factory and its efficient management. The compensation payable should be determined on the same lines as in the case of other properties taken over for war purposes.

The Committee are of opinion that the branch of the Ministry which is best qualified to manage these works is the Explosives Department, who already have control of acetic acid and of all the other chemical ingredients for cellulose acetate and the solvents, and who have officers with the necessary qualifications and a record of success in managing similar factories. The Sub-Committee understand that this Department see no obstacle to this course, except the added burden which would be placed on their staff which is already fully occupied. In view, however of the past history of the case the Committee doubt whether the actual management of the factory would entail more trouble to the Ministry than the present arrangement.

At the same time it should be considered whether an alternative arrangement should not now be made for the manufacture of cellulose acetate in association with the Usines du Rhone. The quantity could not be large in view of the existing works, but should be sufficient to enable a comparison to be made between the costs of manufacture. An investigation should be made in order that any portion of the British Cellulose Works which is not too advanced should be immediately discontinued, and any plant which might prove serviceable to the other manufacturers be diverted to them.

The Sub-Committee understand that one of the firms whose offer to make cellulose acetate was refused also offered to make experiments in its manufacture, dispensing *inter alia* with acetic anhydride, which is the most costly of the ingredients. This proposal has now been taken up, the Sub-Committee are glad to learn, by the Munitions Inventions Department, who are investigating for other reasons the manufacture of acetic acid. The Sub-Committee understand that very great economies may prove possible through manufacture

by this method. They, therefore, urge that it should be assisted in every way possible. The Sub-Committee also understand that considerable economies can be effected by the use of ethyl formate as a solvent in place of methyl acetate, since for the former imported materials are not required, and that experiments at the Royal Aircraft Factory in the production of a pigmented dope may result in the elimination of varnish. They recommend that decisions be arrived at on both these proposals with the utmost despatch, and that if the decision is favourable the consequent modifications in manufacture be introduced as soon as possible.

On the administrative side certain features of this unfortunate case may be regarded as exceptional rather than as typical, but the Committee fear that the lack of co-operation between the branches of departments and of continuity in policy shown in this case is not by any means exceptional. The undertaking was begun on a small scale by the War Office. Finding themselves committed to the scheme the Ministry of Munitions enlarged it and again enlarged it in order to meet increasing demands without realising that terms, which might have been justified on the original modest footing, became extravagant, and indeed positively dangerous, when applied on a larger scale. The fact that the company was in possession of exceptional terms with regard to its capital expenditure does not appear to have been taken into account in considering either alternative offers of manufacture or their programme of extension. To some extent this may have been due to changes in the personnel concerned with the negotiations, but to a larger degree it is the result of want of co-operation between the branches concerned. The Supply Branch treated the company as a private venture employing its own capital. The Contracts Branch were either not fully consulted concerning alternative offers and the necessity for extension, or failed to make the situation clear to the Supply Branch or the Finance Branch. Reliance by the Finance Branch on building licences and on applications for priority as a safeguard against the execution of unauthorised schemes proved valueless in the face of the measures taken by the Supply Branch to secure priority direct and to encourage expenditure without sanction. The Supply Branch neither consulted the Finance Branch beforehand with regard to the greater part of the proposed expenditure nor themselves took any steps to secure that the expenditure or the construction was commensurate with their demands. When the matter was taken up by the Finance Branch at a very late stage, after the Sub-Committee had begun its investigations, they found their hands tied by the commitments already incurred by the company. At no moment was the case, considered as a whole by any authority within the Ministry with full information and in all its aspects.

In the First Report of the current session the Committee urged the necessity of securing that the Finance Branch of the Ministry of Munitions should be consulted at an early and definite stage regarding the proposals of the Supply Branches for obtaining the products required by the programme, and that, in particular, all proposals involving capital expenditure should be considered by that Branch at the earliest possible opportunity, leaving to the Munitions Works Board the subsequent consideration of structural details. The Financial Secretary of the Ministry has stated in the House of Commons that steps have been taken to carry out these recommendations. The case of the British Cellulose Company shows the ill effects of the system, hitherto in force, under which the Department which is interested solely in output urges on expenditure without either consulting the financial authorities or itself considering its economy and necessity. It, therefore, illustrates the urgent need for the introduction of the measures referred to by the Financial Secretary and for securing that they shall be really operative. The case further illustrates very vividly the dangers which are run by the Supply Branches, as was pointed out in the same report, through lack of co-operation with the financial authorities in cases in which criticisms may be brought against them at some future date. A private monopoly in a key industry cannot be instituted at Government expense or with Government assistance without arousing criticism and, if only for this reason, the Supply Branch would have been better advised to have secured the full authorisation of the Finance Department at every step in their negotiations.

Summary of Recommendations.

The Committee recommend:—

- (1) That the ownership of the new works of the British Cellulose Company be taken over by the Ministry.
- (2) That a Technical Committee be appointed to advise upon the necessary steps for the completion of the factory and its efficient management.
- (3) That the Ministry consider, without delay, the advisability of securing an alternative source of supply of cellulose acetate, for the reason stated above.



AVIATION IN PARLIAMENT.

Alliance Aeroplane Factory.

Mr. HOGGE in the House of Commons on July 23rd asked the Minister of Munitions on what terms Messrs. Waring and Gillow's Alliance Aeroplane Factory has been taken over as a settlement of the recent strike; and whether it is proposed to take any others over on the same terms?

The Parliamentary Secretary to the Ministry of Munitions (Mr. Kellaway): As was announced in an official communication which appeared in the Press yesterday, the Alliance Aeroplane Erecting Shop has been taken over by the Ministry of Munitions as a national factory. The superintendent of the Royal Aircraft Factory, Farnborough, has been called in temporarily to manage the factory pending the appointment of a new permanent manager. The financial terms of the transfer are not finally settled. The question of taking similar action in other cases must depend on the facts in each case.

Mr. ROCH: Does that mean that this factory is bought out and out by the Government?

Mr. Kellaway: The financial arrangements incidental to taking over the factory have not been completed, and I cannot make an announcement with regard to it.

Mr. ROCH: Surely he can say whether it is the intention to purchase out and out? I am not asking the price.

Mr. Kellaway: I cannot answer as to that. A good deal would depend on the conditions as to whether purchase out and out will be adopted.

Mr. ROCH: Can he say when he will be able to state definitely what will be done?

Mr. Kellaway: I should be able to give a definite reply at the beginning of next week.

Mr. PRINGLE: Can my hon. friend say whether this is taken over under the Defence of the Realm Act or under the Munitions of War Act, or what statutory power is employed for the purchase, and if he can say that he can surely say whether it is to be purchased?

Mr. Kellaway: I believe it will be taken over under the Defence of the Realm Act.

Mr. PRINGLE: If it is taken over under the Defence of the Realm Act, is there any power to purchase?

Mr. Kellaway: My hon. and learned friend is a lawyer, and I am not.

Col. Wedgwood: Will care be taken to see that no money is paid for the goodwill of the business, and that it is taken simply at its value?

Royal Air Force Depot.

Mr. CROOKS asked the Under-Secretary for War whether he is aware that at No. 1 Stores Depot, Royal Air Force, Kidbrook, a notice has been posted up to the effect that sleeping-out passes are not to be granted to the men; whether he is aware that some of the men live within easy reach of the depot; and whether he will make representations with a view to the withdrawal of the notice?

Maj. Baird: The facts are as stated in the question. The rule has been imposed as a temporary measure in the interests of discipline and efficiency.

Goldbeater Skin.

MAJ. NEWMAN on July 25th asked the President of the Board of Trade whether he is aware that the casing trade in this country and in America is in the hands of a ring composed of Germans, American-Germans, and Jews of German extraction, that consequently the supply of goldbeater's skins, of which some thousands are necessary for the construction of each lighter-than-air machine, was before the war and for two years subsequently controlled by this ring, who exported the bullocks' offal from which the goldbeater skin is obtained to Germany, receiving in return manufactured goods; whether he is aware that Germany was thus enabled to construct a fleet of lighter-than-air machines; and what steps he is taking to control this ring's operations at the conclusion of hostilities, whether the firms composing it are of enemy origin or not?

Mr. Wardle: I believe it is the case that the trade in question was, before the war, mainly in the hands of Germans, and that quantities of goldbeater skins were exported from the United Kingdom to Germany for use in building airships. I am informed by the Admiralty that under the Defence of the Realm Regulations that Department now has control of the whole United Kingdom trade in goldbeater skin, and no firm can do business in that commodity in this country without a permit. The question of the measures to be taken after the war is being considered in conjunction with the Departments concerned.

THE ROYAL AIR FORCE

London Gazette, July 23rd.

The following temp. appointments is made at the Air Ministry:—
Deputy Director.—(Graded for purposes of pay as Staff Officer, 1st Cl.)—
Lieut.-Col. R. J. Armes, and to be Temp. Capt. while so employed; Dec. 21st.
Capt. (Temp. Maj.) C. H. Rowe relinquishes his appointment as S.O., 2nd Cl.;
May 23rd.

The following appointments are made:—
Group Commander.—Maj. (Temp. Lieut.-Col.) W. G. S. Mitchell, D.S.O.,
M.C., and to be Temp. Col. while so employed; July 9th.
Director.—Maj. (Temp. Lieut.-Col.) T. D. Mackie, and to be Temp. Col. while
so employed; April 1st.

Staff Officer, 1st Class.—Maj. S. B. F. Carter, and to be Temp. Lieut.-Col.
while so employed; April 1st.

Staff Officer, 2nd Class.—And to be Temp. Maj. while so employed:—Capt. R.
A. Reid, Lieut. (Temp. Capt.) D. Goad, Capt. J. E. Arrol-Hunter, Lieut. (Temp.
Capt.) J. R. Harland, Lieut. (Temp. Capt.) F. W. Newman, Lieut. (Temp.
Capt.) E. W. F. Cherry; April 1st.

Staff Officer, 3rd Class.—And to be Temp. Capt. while so employed:—Lieut.
(Temp. Capt.) A. Clayton; April 1st. Lieut. J. G. Connell; April 15th. Sec.
Lieut. W. G. Webber; April 23rd. Lieut. (Temp. Capt.) G. F. Pallott; May
1st. Lieut. A. G. Stradling; May 27th. Lieut. W. Reid; May 28th. Lieut.
W. Lingard; June 1st. Lieut. J. W. Jennings; June 21st.

Staff Officer, 4th Class.—And to be Temp. Lieut. while so employed:—Sec.
Lieut. G. H. Brown, Sec. Lieut. G. L'E. Smith, Sec. Lieut. W. J. Ryder; April
1st.

Flying Branch.

To be Temp. Maj. while employed as Maj. (A. and S.):—Lieut. (Temp.
Capt.) H. S. Kerby, D.S.C.; May 18th. Capt. D. Gilley; June 24th. Capt.
C. J. W. Darwin; July 2nd. Capt. O. T. Boyd, from (S.O.); July 7th. Capt.
C. M. Crowe, M.C.; July 9th. Lieut. (Temp. Capt.) C. H. Darley; July 17th.
Lieut. (Temp. Capt.) W. G. Barker, D.S.O., M.C.; July 14th. Lieut. (Temp.
Capt.) W. E. Gardner; July 15th.

Lieut. (Hon. Capt.) W. G. Piggott to be Maj. while employed as Maj. (K.B.);
July 9th.

Lieuts. to be Temp. Capt. while employed as Capt. (A. and S.):—E. McN.
Hand; May 31st. J. G. Burchett; June 22nd. W. A. Leslie; June 24th.
G. E. P. Elder; June 25th. G. C. Gardner; June 28th. S. F. Pickup; June
29th. W. G. Preston; June 30th. R. A. Way; July 1st. W. E. Joseph,
G. A. Dixon, R. E. Dubber; July 5th. R. O. Williams; July 6th. R. D.
Cayley, A. S. Kelly, H. L. W. Flynn (Hon. Capt.), W. H. Stretzel-Miller (Hon.
Capt.), J. W. B. Grigson; July 8th. G. O. Lighthouse; July 9th. F. R.
Walker; July 12th. (Hon. Capt.) G. A. Cox, W. A. Southey, R. C. B. Brading;
July 14th. W. R. Irwin; July 16th. C. Bowman, C. L. Hobbs; July 17th.
To be Temp. Capt. while employed as Capt. (K.B.):—Lieut. (Hon. Capt.)
H. N. Whiting; June 30th. Lieut. J. E. Burgess; July 6th. Sec. Lieut.
(Hon. Lieut.) J. C. Smith, to be Lieut. from (I.); July 18th. The following
are granted Temp. commissions as Sec. Lieuts. (A. and S.):—G. T. Ritchie
(Lieut. S. African Forces), and to be Hon. Lieut. J. S. Smith (Lieut. S. African
Forces), and to be Hon. Lieut.; May 2nd. B. Jacobs, M.C. (Lieut. E. Kent
R. S.R.), and to be Hon. Lieut.; May 29th.

Flight Cadet W. R. Ayling is granted a temp. commission as Sec. Lieut. (A.
and S.); May 31st.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in
their rank as Sec. Lieuts. (A. and S.):—T. Powers; June 8th. R. D. Butler;
June 11th. A. Douglas, J. Macintyre (date of first commission, Feb. 23rd, 1918);
June 14th. S. J. Osborne; June 19th. G. Mathewson; June 25th. E. A.
Kenney; June 30th.

A. G. McI. Jennings, M.C. (Temp. Sec. Lieut., North'd Fus.), is granted a temp.
commission as Sec. Lieut. (K.B.); June 15th.

Lieut. E. E. Dafforn to be Lieut. (O.), from A. and S.; June 28th.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in
their rank as Sec. Lieuts. (Observer Officers):—A. S. Withers; May 17th. J. G.
Quinton, E. Fearnside; June 12th. H. Dyson; June 14th. W. B. Crouch;
June 15th. W. E. Hall; June 25th. J. S. Warry; June 26th. E. S. Noble,
S. Thomas; June 29th. J. Hunter; July 6th.

Sec. Lieut. F. Thomasson to be Sec. Lieut. (O.), from (T.); June 13th.

The following are granted temp. commissions as Sec. Lieuts. (Observer Officers):
—W. Richards (Sec. Lieut. London R., T.F.); June 11th. F. Pascoe (Sec. Lieut.,
Welsh R., Spec. Res.); F. H. Chainey (Sec. Lieut., Suffolk R., T.F.); June 12th.
S. Southill (Temp. Sec. Lieut., Lab. Corps), G. R. Barker (Sec. Lieut., Middx. R.,
T.F.); June 15th. L. G. Macklin (Temp. Sec. Lieut., Shrops. L.I.), M. A.
McKenzie, M.C. (Sec. Lieut., R. Sc. Fus.), G. E. Davis, M.C. (Lieut., R. Fus.,
Spec. Res.), and to be Hon. Lieut.; June 22nd. G. M. Lawson, M.C. (Lieut.,
Leic. R., T.F.), and to be Hon. Lieut. L. Egan (Temp. Sec. Lieut., 2 S.A. Inf.),
H. T. Melville (Temp. Lieut., Gen. List, New Armies), and to be Hon. Lieut.;
June 25th. A. J. R. Napier (Lieut., Ches. R.), and to be Hon. Lieut.; June
28th. W. A. S. Blucke (Lieut., Dorset R., Spec. Res.), and to be Hon. Lieut.,
W. L. W. Dryland (Lieut., North'n R.), and to be Hon. Lieut., A. G. Pryke
(Temp. Sec. Lieut., attd. R. Berks. R.); June 29th. J. S. Blandford (Sec. Lieut.,
E. Kent R.); July 5th. E. H. Ward (Temp. Sec. Lieut., E. York R.), R. A.
Thomas (Temp. Sec. Lieut., R.W. Fus.), G. H. E. Kime (Temp. Sec. Lieut.,
attd. Essex R.), R. G. Bennett (Temp. Sec. Lieut., Reserve Household Bn.);
July 6th. H. Burns (Temp. Sec. Lieut., R. Dub. Fus.); July 15th.

The following Flight Cadets are granted temp. commissions as Sec. Lieuts.
(Observer Officers):—J. S. Downard; July 12th. B. A. Levey, F. C. Jeffkins;
July 18th. D. V. Clawson, R. J. Evans, R. H. Gillespie, R. H. Goodwin, E. E.
Barcomb-Harrison, A. G. Malcolm, P. Marsland, H. Scott, R. Scarfield,
A. E. Shirley, R. L. H. Valentine, M. De Verteuil, M. Wallac, G. V. Young,
L. P. B. Paddy; July 20th. J. M. Scott, C. H. B. Stevenson, G. H. Stephenson,
L. W. G. Stagg, W. Shaw, H. G. Ramsey, C. P. Wogan-Browne; July 21st. G.
Dietrich, A. Wichelow; July 22nd.

Lieut. H. D. Lyons (Lieut., R.A.) relinquishes his commission on ceasing to
be employed; May 30th.

The following Lieuts. relinquishes their commissions on account of ill-health
caused by wounds, and are granted the hon. rank of Lieut.:—A. A. Cameron,
G. H. Haydock; July 24th.

The following Lieuts. relinquish their commissions on account of ill-health
contracted on active service, and are granted the hon. rank of Lieut.:—A.
E. C. Y. Bramble, J. G. Woodley, G. H. Ellis; July 24th.

Lieut. G. Carpenter relinquishes his commission on account of ill-health, and
is granted the hon. rank of Lieut.; July 24th.

Sec. Lieut. S. J. Brewer relinquishes his commission, having been found
permanently unfit as pilot or observer; July 24th.

The surname of Sec. Lieut. P. Collison is as now described and not as in
Gazette, July 12th.

Administrative Branch.

Capt. D. C. L. Speed to be Temp. Maj. while employed as Maj; May 31st.
To be Temp. Capt. while employed as Capt.:—Lieut. W. H. Trinder; May

31st. Sec. Lieut. (Temp. Capt.) J. V. L. Hall; June 3rd. Lieut. G. H. Watts;
June 22nd. Lieut. (Temp. Capt.) H. N. Nowell, from (S.O.), Lieut. S. H. Twining,
Lieut. G. F. Wilson; July 8th.

Lieuts. to be Lieuts.:—W. A. Watson, from (A. and S.); April 1st. J. P.
Greenwood, from (O.); July 4th. L. B. Goodyear, from (O.); July 15th. (Hon.
Capt.) J. W. Higgins, from (O.); July 22nd.

To be Temp. Lieuts. while employed as Lieuts.:—Sec. Lieut. (Hon. Lieut.)
A. B. Biggs; May 31st. Sec. Lieut. (Hon. Capt.) G. B. Lockwood, from (T.);
July 10th. Sec. Lieut. J. Mytton; July 12th.

G. F. Law (late Sec. Lieut., A.S.C.) is granted a temp. commission as Lieut.;
June 1st.

A. F. Douglas (Maj., Sec. Rif., Spec. Res.) is granted a temp. commission
as Lieut. and to be Hon. Maj.; July 15th.

Lieut. M. G. Milson, M.C., relinquishes his commission on account of ill-health
contracted on active service, and is granted the hon. rank of Lieut.; July 24th.

Sec. Lieut. T. W. Barlow relinquishes his commission on account of ill-health
contracted on active service, and is granted the hon. rank of Sec. Lieut.; July
24th.

Sec. Lieut. H. Brown relinquishes his commission on account of ill-health and
is granted the hon. rank of Sec. Lieut.; July 24th.

Sec. Lieut. W. N. Mitchell resigns his commission; July 24th.

The following Sec. Lieuts. (late Gen. List on prob.) are confirmed in their rank
as Sec. Lieuts., Admin.:—G. I. Griffiths, T. H. Jones; May 29th.

The following are granted temp. commissions as Sec. Lieuts.:—T. G. Lewis
(late Hon. Sec. Lieut., Gen. List); April 23rd. E. N. Thomas (Temp. Capt.,
Lab. Corps), and to be Hon. Capt.; J. McAllister (Lieut., R. Sc. Fus., T.F.),
and to be Hon. Lieut.; E. G. T. Lowe (Temp. Lieut., Som. L.I.), and to be Hon.
Lieut., A. L. G. Young (Lieut., Lond. E., T.F.), and to be Hon. Lieut., H. Coggins
(Sec. Lieut., Lond. R., T.F.); May 29th. R. E. Roberts (Temp. Sec. Lieut.)
attd. Welsh R.); June 2nd.

The notification in *Gazette*, July 12th, concerning E. Roebuck is cancelled.

The notification in *Gazette* July 9th concerning H. G. Cogle is cancelled.

Sec. Lieut. G. Barfoot-Saunt to be Lieut. while employed as Lieut.; July 1st.

Lieut. (Hon. Capt.) S. Hooper to be Lieut. (Hon. Capt.) from (A. and S.);
July 8th.

Lieut. H. E. F. Saunders to be Lieut., from (A. and S.); July 10th.

Technical Branch.

The following to be Temp. Lieut.-Cols. while employed as Lieut.-Cols.:—
Capt. (Temp. Maj.), W. J. D. Pryce; June 11th. Maj. J. H. Hills, from (S.O.);
July 1st. Maj. B. F. Moore; July 13th.

Capt. H. E. Hickmott to be Temp. Maj. while employed as Maj.

Capt. (Temp. Maj.) T. M. Barlow to be Capt., from (Ad.), and to retain his
temp. rank while employed as Maj.; May 16th.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in
their rank as Sec. Lieuts.:—F. J. Harrington; May 1st. R. T. Smith; May
18th. F. J. Quinlan, W. Teer, J. J. Honan, A. E. Gooch, R. W. B. Murch;
June 1st. G. A. Roper; June 2nd. W. L. Pike, M.C.; June 20th.

W. G. P. Cobbett (Temp. Capt., R.E.) is granted a temp. commission as Sec.
Lieut., and to be Hon. Capt.; June 20th.

Lieut. N. Cox-Walker to be Sec. Lieut., and to be Hon. Lieut., from (O.);
June 1st.

Lieut. E. D. Inskip, from (Fd.), to be Sec. Lieut. (Hon. Lieut.); June 21st.

Maj. F. C. H. C. Sinclair relinquishes his commission on account of ill-health,
and is granted the hon. rank of Maj.; July 24th.

Lieut. E. G. Thompson relinquishes his commission on account of ill-health,
and is granted the hon. rank of Lieut.; July 24th.

Sec. Lieut. G. F. Pugsley relinquishes his commission on account of ill-health
and is granted the hon. rank of Sec. Lieut.; July 24th.

Medical Branch.

L. S. Hooper (Temp. Capt., R.A.M.C.) is granted a temp. commission as Capt.,
and to be Temp. Maj. while specially employed; July 22nd.

Memoranda.

Col. (Temp. Brig.-Gen.) J. D. Edwards (Capt., R.N.) relinquishes his com-
mission on return to R.N.; July 5th.

Capt. J. S. D. Berrington to be Temp. Maj. without the pay and allowances of
that rank while specially employed; July 24th.

Maj. (Temp. Lieut.-Col.) R. F. Drury, O.B.E., relinquishes his commission
on ceasing to be employed, and is granted the hon. rank of Lieut.-Col.; July
24th.

Maj. B. Hopkinson, C.M.G., to be Temp. Col., while employed at Ministry of
Munitions; May 24th.

The following to be Temp. Lieut.-Cols. while employed at Ministry of Muni-
tions:—Capt. H. W. S. Outram, Capt. R. H. Verney; April 1st. Maj. W. D.
Beatty, Capt. J. Romanes, Capt. A. H. W. Skitt, Maj. H. T. Tizard; May 24th.

The following to be Temp. Maj. while employed at Ministry of Munitions:—
Capt. V. S. Brown, Capt. P. Bishop, M.B.E., Capt. G. B. Bulman, Capt. M. O.
Darby, Capt. C. H. Drabble, Capt. A. T. Evans, Capt. G. Gude, Lieut. A. C.
Hartley, Capt. T. G. Hull, Capt. T. G. Leith, Sec. Lieut. J. H. Ledeboer, Capt.
J. J. Meakin, Capt. R. H. Mayo, Capt. A. McAlister, Capt. J. S. Nicholson,
Capt. W. Park, Lieut. (Hon. Maj.) H. W. Prance, Capt. S. J. Radford, Capt.
T. M. Rogers, O.B.E., Capt. D. B. Sanders, Capt. W. A. C. Sandford-Thompson,
Capt. R. V. Wynn; April 1st. Lieut. A. W. Crombie, Lieut. (Hon. Capt.) G.
Dennison, Lieut. (Hon. Capt.) C. L. Hardy, Capt. D. H. Kennedy, Lieut. (Hon.
Capt.) W. Sillem, Capt. C. J. Stewart, Lieut. S. Whitechurch, Capt. C. W. C.
Wheatley; May 24th.

Hon. Capt. F. B. Halford to be Hon. Maj. whilst employed at Ministry of
Munitions; May 24th.

The following to be Temp. Capt. whilst employed at Ministry of Munitions:
Sec. Lieut. C. W. Alexander, Lieut. C. H. T. Alston, Sec. Lieut. (Hon. Lieut.)
C. A. Angrave, Lieut. R. W. B. Billingham, Lieut. (Hon. Capt.), S. S. Blackley,
Lieut. (Hon. Capt.) A. Burgess, Lieut. (Hon. Capt.) H. L. U. Clark, Sec. Lieut.
(Hon. Capt.) J. H. Cotton, Sec. Lieut. (Hon. Capt.) G. H. Creighton, Lieut.
(Hon. Capt.) L. Crooks, Sec. Lieut. (Temp. Lieut.) W. Chapman, Sec. Lieut.
L. H. Clifford, Lieut. J. D. Coales, Sec. Lieut. (Hon. Lieut.) F. A. Cobb, Lieut.
J. V. Collins, Sec. Lieut. (Hon. Capt.) H. F. L. Dixon, Sec. Lieut. E. Dodson,
Lieut. (Hon. Capt.) H. B. Dresser, Lieut. (Hon. Capt.) F. W. Elstob, Lieut.
(Hon. Capt.) L. G. Fenner, Lieut. (Hon. Capt.) G. G. R. Fraser, Sec. Lieut. (Hon.
Capt.) A. W. Gillespie, Sec. Lieut. (Hon. Capt.) S. V. Green, Lieut. (Hon.
Capt.) W. E. Grey, Lieut. (Hon. Capt.) A. G. Griggs, Sec. Lieut. F. M. Harding,
Lieut. C. A. Higgins, Sec. Lieut. F. T. Hill, Lieut. (Hon. Capt.) J. M. Macaulay,
Lieut. (Hon. Capt.) J. C. Mitchell, Lieut. H. F. McLoughlin, Sec. Lieut. (Hon.
Capt.) J. C. Murray, Sec. Lieut. (Hon. Capt.) W. E. Nuttall, Lieut. H. B. Neame,
Sec. Lieut. D. E. Rodwell, Lieut. (Hon. Capt.) A. N. Robinson, Lieut. (Hon. Capt.)
M. F. W. Sampson, Lieut. T. G. Skeats, Lieut. A. P. Thurston, Lieut. D. F.
Upjohn, Sec. Lieut. (Hon. Capt.) R. Waddell, Lieut. E. W. Walford, Lieut.
S. J. Waters, Sec. Lieut. H. S. Wildebleed, Sec. Lieut. (Hon. Lieut.) F. C.

Wilkinson, Lieut. F. M. Williams, Lieut. F. A. Woolfe, Lieut. G. J. Woods; April 1st. Sec. Lieut. R. J. Anderson, Lieut. J. C. Briggs, Sec. Lieut. E. S. Crabtree, Lieut. F. J. Collet, Lieut. H. G. Day, Lieut. H. S. Edgar, Sec. Lieut. (Hon. Lieut.) R. C. Gallop, Lieut. P. M. E. Impey, Lieut. L. B. W. Jolley, Sec. Lieut. (Hon. Lieut.) R. N. Liptrot, Sec. Lieut. H. D. Lehmann, Lieut. N. Martin, Lieut. W. H. F. Mattinson, Sec. Lieut. (Hon. Capt.) S. Morris, Sec. Lieut. (Hon. Lieut.) S. E. Neal, Sec. Lieut. R. Neilson, Sec. Lieut. (Hon. Lieut.) D. A. Parsons, Lieut. R. W. Patterson, Sec. Lieut. F. W. M. Pedley, Lieut. H. Pooley, Sec. Lieut. A. F. C. Pollard, Lieut. H. Rochford, Sec. Lieut. G. G. Smith, Sec. Lieut. N. F. Stockbridge, Sec. Lieut. G. W. Y. Swanson, Sec. Lieut. (Hon. Lieut.) E. G. Thompson, Lieut. H. S. V. Thompson, Lieut. G. Urquhart, Sec. Lieut. J. A. Woods, Lieut. J. G. Wilson; May 24th.

London Gazette, July 26th.

The following temp. appointment is made at the Air Ministry:—
Staff Officer, 3rd Class.—Lieut. E. J. D. Townsend, and to be Temp. Capt. whilst so employed, vice Lieut. (Temp. Capt.) F. A. M. Rawes; June 24th.

The following temp. appointments are made:—
Group Commander.—Lieut.-Col. E. A. D. Masterman, C.B.E., and to be Temp. Brig.-Gen. whilst so employed; July 3rd.

Staff Officer, 1st Class.—Capt. (Temp. Maj.) T. E. Longridge, and to be Temp. Lieut.-Col. whilst so employed; July 19th.

Staff Officers, 2nd Class.—And to be Temp. Maj. whilst so employed:—Capt. C. S. McNab; from April 1st to June 28th. Capt. H. A. P. Disney, from April 1st to May 27th. Lieut. (Temp. Capt.) V. Buxton, vice Capt. O. T. Boyd, M.C.; July 7th. (T.) Sec. Lieut. H. W. Sidley; May 18th. The name of Lieut. (Temp. Maj.) H. St. C. Smallwood is as now described, and not as in the *Gazette* of June 4th.

Staff Officers, 3rd Class.—And to be Temp. Cadets whilst so employed, if not already holding that rank:—(T.) Sec. Lieut. H. H. Harries; May 27th. Lieut. (Temp. Capt.) A. E. Illingworth; July 6th. The surname of Capt. E. A. Beaulah is as now described, and not as in the *Gazette* of July 2nd. The initials of Lieut. (Temp. Capt.) G. H. L. Sweet are as now described, and not as in the *Gazette* of July 19th.

Flying Branch.

Capt. (Temp. Maj.) H. I. F. Yates, M.C., to be Temp. Lieut.-Col. whilst employed as Lieut.-Col. (A. and S.); July 12th.

Capt. (Temp. Maj.) G. S. Trewin to retain his temp. rank whilst employed as Maj. (O.) from S.O.; July 8th.

Lieuts. to be Temp. Capt. whilst employed ad Capt. (A. and S.):—F. R. McCall; June 30th. H. R. Eycott-Martin (Hon. Capt.) B. N. Harrop; July 13th. E. J. B. How, E. L. Roberts; July 15th. E. G. Brookes, T. M. Williams; July 19th.

Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts. (A. and S.):—H. H. Newman; May 29th. J. A. Martin; June 13th. J. G. S. McGeown; June 15th. J. K. Lancaster; June 17th. C. S. Clarke; June 18th. E. A. Spence; June 27th. E. J. Mayne; July 2nd. O. J. Orr; July 3rd. H. Sharkey; July 5th. J. Lightoller, G. A. R. Muschamp, S. McLeod; July 6th. O. J. Noonam; July 9th.

The following are granted temp. commissions as Sec. Lieuts. (A. and S.):—H. J. Martin (Sec. Lieut., Kent Cyclist Bn., T.F.); May 11th. H. E. Turnley (Capt. S. A., Gen. List), and to be Hon. Capt.; May 19th. R. N. Haile (Temp. Lieut., Leins. R.), and to be Hon. Lieut.; May 23rd. R. Auld (Lieut., R. Soc. Fus., T.F.), and to be Hon. Lieut.; May 25th. G. F. Davis (Lieut., E. Kent R., T.F.), and to be Hon. Lieut.; June 15th. R. Davie (Lieut. R. Highrs., T.F.), and to be Hon. Lieut.; June 18th. H. R. Dennison (Capt., Br. Columbia, R., C.E.F.), and to be Hon. Capt.; June 20th. G. H. Grimshaw (Temp. Sec. Lieut., S. Lan. R.); July 6th. J. V. Gascoyne; July 19th. A. R. Coppin (late Sec. Lieut., S. Staffs. R.); July 20th. S. C. H. Biddle; July 22nd.

The following Prob. Flight Officers (late R.N.A.S.) are granted temp. commissions as Sec. Lieuts. (A. and S.):—A. L. Coulson, J. W. Dowling, W. S. Haney, H. F. Farncomb, F. E. Rees, G. A. Davis; June 5th. J. P. Corkery, W. E. Lewis, A. J. Mantle, H. M. Schofield, F. C. Wareham; June 7th.

W. J. Dooley (late Lieut., Suffolk R., T.F.) is granted a temp. commission as Sec. Lieut. (K.B.), and to be Hon. Lieut.; July 20th.

Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts. (Observer Officers):—W. G. P. Dyson; June 12th. I. P. Aitken, G. T. Coles; July 10th. N. J. Adams; July 12th. J. T. Potts, C. M. Whitham, T. Sydenham, T. P. Speakman; July 13th. H. M. Cartwright, J. L. M. Oliphant; July 20th.

The following are granted temp. commissions as Sec. Lieuts. (Observer Officers):—F. H. Wrigley (Temp. Sec. Lieut., R. Ir. R.); April 20th. R. Kelly (Temp. Sec. Lieut., Rif. Brig.), R. P. Gondill (Temp. Sec. Lieut., Yorks L.I.); July 6th. S. J. H. Pile, M.C. (Temp. Sec. Lieut., Midd'x R.); July 9th. T. L. Jones (Temp. Sec. Lieut., Welsh R.), S. P. Scott (Sec. Lieut., N. Lan. R., T.F.); July 10th. S. W. P. Foster-Sutton (Sec. Lieut., E. Kent R.), D. J. Muir (Sec. Lieut., R. War. R., T.F.), H. B. Steckley (Sec. Lieut., Lond. R., T.F.); July 12th. I. P. Anderson (Lieut., Sco. Rif., Spec. Res.) and to be Hon. Lieut.; G. M. Jeffrey (Sec. Lieut., High L.I., Spec. Res.); July 13th. D. H. Burrows (Lieut., Quebec R.), and to be Hon. Lieut., C.E.F.; July 18th. A. F. Beckett (Sec. Lieut., Leic. R., T.F.), F. W. Bate (Sec. Lieut., L'pool R., T.F.), J. Clarke (Sec. Lieut., S. Lan. R., T.F.), L. J. Evans (Sec. Lieut., Lincs. R., T.F.), E. P. C. Godsil (Temp. Sec. Lieut., Lab. Corps), J. A. Holmes (Temp. Sec. Lieut., Northd. Fus.), H. Jonsson, M.C. (Lieut., Br. Columbia R., C.E.F.), and to be Hon. Lieut.; R. W. Jackson (Lieut., R.F.A., Spec. Res. and to be Hon. Lieut. J. E. Purslow, M.C. (Capt., Saskatchewan R., C.E.F.), and to be Hon. Capt., T. J. Ruston (Sec. Lieut., W. York R., T.F.), A. C. Rankin, M.C. (Capt., R.E., Spec. Res.) and to be Hon. Capt., R. S. Smith (Temp. Sec. Lieut., Lab. Corps), F. P. J. Travis (Lieut., Quebec R., C.E.F.), and to be Hon. Lieut., C. Wright (Sec. Lieut., W. Rid. R., T.F.); July 20th. A. Turnbull (Temp. Lieut., A. Cyclist Corps), and to be Hon. Lieut.; July 22nd.



Supplies by Aeroplane.

"A BRILLIANT piece of work was performed by the Air Service on July 17th and subsequently," says the *Morning Post* correspondent on the French front. "In the neighbourhood of Pourcy, a French battalion found itself cut off from the main body of the French forces. They determined to hold out, and it was decided to supply them by aeroplanes. A few hours after the decision was reached bread, biscuits, and over two hundred and fifty boxes of preserved beef were dropped among the troops. Next day the exploit was repeated, and as the battalion signalled that they were running short of ammunition, quantities of cartridges were dropped for them. By means of these supplies the battalion was able to put up a desperate resistance while waiting to be relieved by counter-attacks. These succeeded by the evening of

Lieut. J. A. Morell relinquishes his commission on account of ill-health caused by wounds, and is granted the hon. rank of Lieut.; July 27th.

Lieuts. relinquish their commissions on account of ill-health, and are granted the hon. rank of Lieut.:—D. W. Winter, W. E. Wright; July 27th.

Lieut. L. E. Nicholson resigns his commission, and is granted the hon. rank of Lieut.; July 27th.

Lieut. (Hon. Capt.) N. S. Caudwell (Capt., W. Ont. R.) relinquishes his commission on ceasing to be employed; July 18th.

Lieut. (Hon. Capt.) G. P. C. Greene resigns his commission; July 27th.

Sec. Lieuts. relinquish their commissions on being found permanently unfit as Pilots or Observers:—H. C. Belore, C. H. G. Collins, H. F. K. Greaves, A. N. Tuck; July 27th.

Administrative Branch.

Lieut. (Temp. Capt.) H. Jullerot, from (T.) to be Temp. Maj. while employed as Maj.; July 3rd.

The following are granted temp. commissions as Capt. (A. and S.):—C. Hunt (late Capt., Hants R.); April 2nd. A. H. Hulton (Capt., R.A., T.F.); April 15th.

Lieuts. from (A. and S.), to be Lieuts.:—R. N. Ball; July 17th. G. A. Masters; July 22nd.

Sec. Lieut. S. H. Tigg to be Temp. Lieut. while employed as Lieut.; June 1st.

H. W. Liversidge is granted a temp. commission as Lieut.; July 22nd.

The following are granted temp. commissions as Sec. Lieuts.:—R. P. Nethercot, M.C. (Lieut., W. York R., T.F.); April 25th. G. H. Allender; July 10th. R. Gwynne-Norton (late Lieut., R.F.A.) and to be Hon. Lieut., G. J. C. W. Fitzwilliam (late Sec. Lieut., North'n Yeo.), E. H. Brading, A. J. Bull, J. Davies, J. Harvey, J. Mahoney, W. W. Shaker, T. A. G. Strickland; July 20th. E. M. Wood (late Lieut., M.G.C.), and to be Hon. Lieut., E. B. Addison, F. A. Dinsdale, P. Fearnley, A. H. R. Gowie, P. C. Ingram, J. M. C. Lawson, E. Maffey, H. C. Martin, H. A. Parsons; July 22nd. W. H. Johnson; July 26th.

The notification in *Gazette* June 25th concerning D. McCulloch is cancelled.

The notification in *Gazette* July 23rd regarding following officers is cancelled:—G. Barfoot-Saunt, S. Hooper, H. E. F. Saunders.

Lieut.-Col. J. M. Rose (Lieut.-Col., R.M.A.) relinquishes his commission on ceasing to be employed; July 9th.

Sec. Lieut. P. J. Lockwood relinquishes his commission on account of ill-health, and is granted hon. rank of Sec. Lieut.; July 27th.

Technical Branch.

Lieut. (Temp. Capt.) C. G. Coe to be Temp. Maj. while employed as Maj.; June 1st.

Sec. Lieuts., to be Temp. Lieuts. while employed as Lieuts.:—G. R. Cobb, J. R. Bedford; June 11th. G. Barfoot-Saunt; July 1st.

Lieuts. (A. and S.) to be Lieuts.:—(Hon. Capt.) S. Hooper; June 29th. H. E. F. Saunders; July 10th. (Hon. Capt.) A. S. Goodwin; July 13th.

Medical Branch.

The following are granted temp. commissions as Capt. (A. and S.):—A. A. Wilkinson. R. E. V. Hale; July 22nd.

The following are granted temp. commissions as Lieuts.:—C. M. John; July 18th. K. Batten; July 19th. G. Hughes, H. T. Rymer, J. Valerie; July 22nd. J. P. Wells; July 24th.

Memoranda.

Maj. (Temp. Lieut.-Col.) J. G. Weir, C.M.G., to be Temp. Brig.-Gen. while specially employed; July 6th.

J. A. Houson-Crauford (Hon. Lieut.-Col.) is granted temp. commission as Lieut.-Col. and not as stated in *Gazette* May 3rd.

Capt. J. Hamilton (Capt. Gen. List) relinquishes his commission on ceasing to be employed; July 1st.

Royal Flying Corps (Military Wing).

London Gazette Supplement, July 22nd.

Balloon Officer.—Lieut. C. St. G. Lyster-Smythe, E. Surr. R., vacates his appointment; March 23rd.

General List.—To be Temp. Sec. Lieuts.:—Actg. Sergt. F. J. Wolno, from Can. Inf.; March 14th. Sergt. B. Herbert, from M.G. Corps; March 23rd. Local Sec. Lieut. W. A. Russell, from E.C.T.C.; Staff-Sergt. G. Holden, from Can. R.; Sergt. S. D. Evans, from Welsh R.; Corpl. K. Shanks, from Trg. Res.; L.-Corpl. T. Raines, from M.G. Corps; March 24th; Corpl. R. H. Sanders, from R.E., T.F.; March 27th.

London Gazette Supplement, July 23rd.

Balloon Commander.—(Graded as Balloon Officer).—Temp. Sec. Lieut. C. F. Frank, Gen. List, from a Balloon Officer, and to be Temp. Lieut. while so employed; Feb. 28th.

General List.—Sergt. S. Gulliver, from Lond. R., T.F., to be Temp. Sec. Lieut.; March 1st.

Cadet P. E. Kearney, from R.F.C., to be Temp. Sec. Lieut. (on prob.); March 21st.

London Gazette Supplement, July 24th.

Equipment Officer, 3rd Class.—Sec. Lieut. C. T. Davis; Jan. 1st (substituted for notification in *Gazette* March 12th).

General List.—To be Temp. Sec. Lieuts.:—Saddler F. J. Frape, from A.V.C.; March 24th. L.-Corpl. S. D. Sayer, from Suff. R., T.F.; March 31st.

London Gazette Supplement, July 25th.

Assistant Instructor in Gunnery.—Graded as an Equipment Officer, 3rd Cl.—Temp. Sec. Lieut. W. S. Jamieson, Br. W.I.R., from a Flying Officer; March 25th.

General List.—Pte. H. Hudson, from A.S.C., to be Temp. Sec. Lieut.; March 10th.

London Gazette Supplement, July 26th.

Temp. Sec. Lieut. R. Knight, R.F.C., is transferred to Gen. List for duty with Army Signal Service; March 4th.

the 18th, when the battalion was set free from the perilous position in which it had held its ground."

The Voluntary Pensions Fund.

A PRELIMINARY scheme has now been drawn up for the control of the £3,000,000 Voluntary Pensions Fund now being raised by the Minister of Pensions. The fund will be under the control of the Minister for Pensions, and will be applied for the benefit of disabled officers and men discharged from the Navy, Army and Air Force, their wives, widows, families, or dependants. The main object is to assist such applicants in establishing themselves in civil life, and applications to this end will have the first claim on the fund.

The machinery of the local War Pensions Committees of the Ministry will be used to investigate the character of applicants and their fitness to receive help from the fund.

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

British.

Headquarters R.A.F., Independent Force, July 21st.
 "As a result of a photographic reconnaissance carried out on the 20th inst. extensive damage is revealed at the hostile aerodrome at Morhange, Lorraine, attacked on the night of the 19th-20th. One large shed and three hangars were destroyed. There is nothing further to report."

General Headquarters, July 21st.
 "On the 20th inst., except in the early morning, the weather was again unsuitable for photography and long-distance reconnaissances. It did not prevent our aeroplanes from bombing or from carrying out close reconnaissance and observation for the artillery throughout the day. Eighteen tons of bombs were dropped by us on different targets, including Courtrai and Lille railways, Bruges docks, three large ammunition dumps, and hostile billets on various parts of the front. Slightly more fighting took place than on the previous day, and 14 enemy machines were brought down. Three other hostile machines were driven down out of control and three German observation balloons were destroyed. Seven of our aeroplanes are missing."

War Office, July 21st.
 "Italian Front.—Since the 16th inst. 17 more enemy aircraft have been destroyed by the R.A.F. with no loss to ourselves."

Headquarters R.A.F., Independent Force, July 22nd.
 "On the night of July 21st-22nd many successful bomb attacks were carried out by our squadrons. Over a ton of bombs was dropped on the extensive railway sidings at Luns, south-east of Mezières. The Badische-Anilin und Soda factory (Mannheim) was again subjected to attack and many good bursts were observed in the factory. In a factory south-east of Zweibrücken a large explosion was caused. Bombs were dropped on three hostile aerodromes, and hangars were seen to be hit. Low-flying aeroplanes attacked and hit five trains, bringing them to a standstill. Searchlights and anti-aircraft guns were attacked with bombs and machine-gun fire. All our machines returned."

"On the 22nd inst. the important powder factory at Rottweil was attacked. A direct hit was obtained on one of the big sheds, and, as a result, several other sheds in its vicinity blew up. A fire broke out which could be seen from a distance of 60 miles. All our machines returned safely."

General Headquarters, July 22nd.
 "On the 21st inst. the very strong west wind and low clouds almost entirely prevented flying, except on a small part of the front. Machines in this sector dropped bombs on various targets, including a railway station, where a direct hit was obtained on an ammunition train. In combats, five hostile machines were brought down. Four of our machines are missing. After dark the sky cleared and the wind dropped considerably, enabling the night bombing machines to carry out raids on the greater part of the front. Thirteen tons of bombs were dropped on the railways at Seclin, Menin, Lille, and Cambrai. One machine has not returned."

Headquarters R.A.F., Independent Force, July 23rd.
 "In a raid carried out on the afternoon of the 22nd inst. the main station of Osnaburg was hit, and bursts were seen on the sidings. One hostile machine was destroyed. All our machines returned. On the night of July 22nd-23rd repeated attacks, attended with good results, were carried out against the enemy's aerodromes. Fires and explosions were observed. Other targets were engaged with bombs and machine-gun fire."

General Headquarters, July 23rd.
 "On the 22nd inst. improved weather was accompanied by greater activity in the air than had been possible during the past few days. Several long-distance reconnaissances were completed by our machines and many photographs taken. Twenty-three tons of bombs were dropped by us on the railway stations at Cambrai, Bray, and Lille, on ammunition dumps near Armentières and Bapaume, and on hostile billets along the whole front. In air fighting 23 hostile machines were brought down, and three others were driven down out of control. Three German observation balloons were shot down in flames. Ten of our machines are missing. Continuous rains throughout the night prevented bombing operations."

General Headquarters, July 24th.
 "On the 23rd inst. little flying was possible owing to wind and rain."

General Headquarters, July 25th.
 "On the 24th inst. there was still a very strong west wind blowing, and the weather mainly overcast. Towards evening the sky cleared, and a certain amount of sharp fighting and bombing took place. Fifteen hostile machines were brought down and three driven down out of control. Three of our machines are missing. During the night over 24 tons of bombs were dropped by us on the railways at Valenciennes, Seclin, Courtrai, and Armentières, and on hostile billets on different parts of the front. Two trains were hit with bombs, and thousands of rounds fired from machine guns at various ground targets, including active anti-aircraft guns, searchlights and transport. All machines returned. One of the enemy's night-bombing machines was brought down in our lines by anti-aircraft gunfire."

Headquarters R.A.F., Independent Force, July 26th.
 "On the night of July 25th-26th successful attacks were carried out on the station and factory at Pforzheim, the factory at Baalon, and the station at Offenbourg. Two fires broke out at Offenbourg. Four hostile aerodromes were bombed and attacked with machine gun fire, and hangars were hit. Trains, anti-aircraft batteries, searchlights, and other ground targets were fired upon with machine guns. All our machines returned."

General Headquarters, July 26th.
 "On the 25th inst. the high wind still continued, but visibility was better than on previous days. A certain amount of work in conjunction with the artillery was done, and many reconnaissances and the usual bombing carried out by our aeroplanes. Amongst the targets attacked were three large ammunition dumps, the docks at Bruges, and numerous villages used as billets by the enemy's troops. In air fighting the strong west wind greatly favoured the enemy. In spite of this, 25 hostile machines were brought down by us and six others were driven down out of control. A hostile balloon was shot down in flames. Fifteen of our machines are missing. After dark, our night-bombing machines again attacked the railways at Courtrai and Seclin, and dropped over 300 bombs on rest billets. All our machines returned. One of the enemy's night-flying aeroplanes was shot down by anti-aircraft gun fire behind our lines."

Admiralty, July 27th.
 "In Home waters, during the period July 18th-24th inclusive, Royal Air Force units working with the Navy have maintained escort, hostile aircraft, and anti-submarine patrols. Enemy aircraft activity over the Belgian coast and in close proximity to the English coast has been above normal and several engagements have taken place. Six enemy machines have been destroyed, and eight driven down out of control. Five of our machines are missing. Our bombing formations have attacked military objectives at Zeebrugge, Bruges, and Ostend, over 15 tons of bombs being dropped with good results. Enemy destroyers and trawlers have also been attacked, a direct hit being obtained on one trawler, which was subsequently observed to be in a sinking condition."

General Headquarters, July 27th.

"On the 26th inst., during the short period of the day in which flying was possible, three enemy machines were brought down by our airmen and a hostile balloon was shot down in flames. Two of our machines are missing. One of our machines reported as missing on the 25th inst. has since been located."

General Headquarters, July 28th.
 "On the 27th inst. low clouds and rain prevented flying by day. During the night bombs were dropped on hostile billets and hutments in the vicinity of Bapaume."

French.

Paris, July 20th.
 "Our Air Service, redoubling its activity during the day of July 19th and the night of July 20th, multiplied its expeditions and carried on a very hard fight with the enemy forces. The French and British bombing machines, taking as their principal objectives the crossings of the Marne, did not cease to hinder and in some places completely stopped the enemy's supply service, thus playing an important part in the struggle which was to bring about the retreat of the German troops, attacking with machine guns and bombs the concentrations of troops which the enemy was preparing for his counter-attacks, and his columns and convoys. They caused the enemy serious losses. On the Marne, as well as at Oulchy-le-Château, Fère-en-Tardenois, Fismes, Bazoches, and in the whole rear zone of the battle, 24 tons of projectiles were dropped during the day, and 28 tons during the night on the enemy's assemblies and lines of communications. A violent fire broke out at Vouziers and several at Fère-en-Tardenois, at Fismes railway station, and south of this region. Explosions were observed at Laon railway station. At the same time our infantry aeroplanes marked the advance of our troops and Tanks between the Aisne and the Marne, signalled the arrival of enemy reserves, and took direct part in the battle by attacking these reserves with machine guns. The many fights fought by our crews in collaboration with the British obtained good results. Twenty-six German aeroplanes were shot down or put out of action, and four captive balloons were set on fire. Everywhere the German Air Service was made to feel the sting and superiority of the Allied airmen."

"Balkans.—During the day's air fighting the British aviators forced two enemy aeroplanes to land."

Paris, July 21st.
 "Yesterday storms and low clouds hampered the work of our airmen. Nevertheless our crews took the air. Eleven German aeroplanes were brought down. The Franco-British bombing squadrons made several raids in the battle zone. Six tons of projectiles were dropped on bivouacs, convoys, and gatherings of enemy troops. Sub-Lieut. Fonck brought down two German aeroplanes on July 16th, two on the 18th, and three on the 19th, or seven aeroplanes in four days. Six of these machines were brought down in flames. The total number of machines brought down until to-day by this pilot and officially verified is 56."

Paris, July 22nd.
 "During the day of July 21st the activity of our bombing aeroplanes continued to be very great, in spite of very poor weather. In the course of day and night expeditions 50 tons of projectiles were dropped on the enemy's lines of communications, the cantonments and bivouacs of the Vesle and Ardre Valleys, and on the railway station of Laon, Fismes, Berry-au-Bac, &c. Fère-en-Tardenois, crowded with troops and convoys, was the object of very violent bombardments, as the result of which an immense fire, followed by several explosions, was observed. Another fire broke out at Fismes railway station. In addition, several tens of thousands of rounds of cartridges were fired on German troops and batteries, which had been very active, and which were reduced to silence, in the region of Courmont, Ronchères, and Villeneuve. During the same day our crews shot down nine enemy machines."

Paris, July 23rd.
 "During the day of July 22nd the work of our air service continued on the whole battle-front with great activity. The French and British crews fought numerous engagements, which cost the enemy heavy losses. Thirty-seven German aeroplanes were shot down or put out of action, 14 of them by British pilots. In addition four captive balloons were set on fire by French airmen. Bombing operations were continued with the same method as on the preceding days and with equally good results. The enemy's points of concentration, encampments, and centres of communication were our particular targets, and 29 tons of projectiles were dropped on them. The British bombing planes, for their part, dropped 4½ tons of explosives on the aviation grounds and railway stations in the back area of the battlefield. During the night of July 22nd-23rd, in spite of the rain and cloudy weather, a successful raid was made on the railway station of Maison Bleue, and over 1½ tons of projectiles dropped on the buildings and trains drawn up at this station started a great fire and a series of violent explosions. The American fighting and observation aircraft, with the impetuosity and bravery peculiar to the troops of the United States, has co-operated in the expeditions of the last few days and has taken its share of the successes gained by our aerial forces."

"The following are the latest officially confirmed successes: Sub-Lieut. Bourjade has set on fire four captive balloons, three of them on July 15th and the fourth on July 17th, bringing up to 13 the number of machines he has destroyed until that date. Sub-Lieut. Nuville on July 15th brought down his 10th machine (nine aeroplanes and one captive balloon). Lieut. de Turenne brought down on July 15th and 16th his 10th and 11th aeroplanes. Capt. Lahouille, who destroyed three captive balloons on July 15th, has 10 machines officially confirmed to his credit (five captive balloons and five aeroplanes). Sub-Lieut. Noques on July 17th gained his 10th victory (seven aeroplanes and three captive balloons). Sub-Lieut. Coiffard on July 18th brought down his 16th machine (11 captive balloons and five aeroplanes). This pilot brought down 13 machines in a month and a half, seven of them in four days."

Paris, July 25th.
 "During the day of July 24th the French and British crews shot down nine German aeroplanes and set fire to three captive balloons. In spite of the bad weather, our bombing planes carried out numerous expeditions against the rear zone of the battle. The railway station and depôts of Amifontaine, the railway stations and railway lines of Bazoches, Courlandon, Fismes, and Guignicourt were copiously bombed. Altogether 30 tons of projectiles were used with good results. Fires and big explosions were observed at Courlandon and Fismes. Sub-Lieut. Cazale shot down on July 21st his 10th machine (nine aeroplanes and one Drachen), and Adjutant Bouyer shot down on July 19th two aeroplanes, bringing the number of machines credited to this Ace up to 10."

"During the day of July 25th seven enemy aeroplanes were shot down or forced to land by our Air Forces, and 18 by the British Air Force acting in liaison with ours. We on our side dropped over 38 tons of projectiles by night and day on the railway stations, lines of communication, hangars, dumps, and parks of the rear zone of the battle. Fires and explosions were observed. The British bombing planes carried out also several expeditions, and dropped four tons of projectiles on Bazoches, Fère-en-Tardenois, and Mt. Notre Dame."

"Albania.—Allied airmen carried out numerous bombardments. One enemy aeroplane was brought down."

Paris, July 28th.
 "Adjutant Artigan, on July 22nd, brought down his tenth German aeroplane."

**Belgian.**

"Sec. Lieut. W. Coppens brought down two enemy balloons—one on Friday evening, the other on Saturday morning, thus achieving his 16th and 17th victories. A German aeroplane was brought down by the artillery."

Havre, July 21st.

Havre, July 23rd.

"On the night of July 21st-22nd enemy airmen dropped many bombs on our cantonments. Two of the machines, of the Gotha type, were brought down in our lines, one by our air defences. Sub-Lieut. Coppens brought down, on the morning of the 22nd, three balloons, which bring the number of his victories up to 20. This morning one of our airmen brought down an enemy balloon near Zaren."

Havre, July 25th.

"Sub-Lieut. Coppens brought down a captive balloon in flames over Zaren, thus achieving his 21st victory."

Italian.

Rome, July 21st.

"Six aeroplanes were captured in the operations in Albania on July 19th."

"Nine enemy aeroplanes were brought down in air fighting."

Rome, July 22nd.

"Two enemy aeroplanes were brought down in air fighting."

Rome, July 23rd.

"Our aeroplanes effectively bombarded the railway establishments of Matarello (Trent)."

"The Chief of the Naval Staff announces that Italian and British naval units continue active in the Adriatic. On July 21st military works and the anchorages at Cattaro and Antivari were again bombed with visibly good results and with no loss to ourselves. Two enemy machines detected on July 18th above Ancona were both brought down by our seaplanes. Two of the airmen were taken prisoner."

Rome, July 24th.

"During the night of July 22nd-23rd an enemy plane, hit by the anti-aircraft artillery, fell within our lines. During the day yesterday three other hostile machines were brought down in air fighting. Last night enemy aeroplanes dropping bombs on the back areas were attacked by our airmen, who brought down two of them over Treviso."

Rome, July 25th.

"In air fighting two hostile aeroplanes were brought down."

"During the morning of July 22nd, a number of our aeroplanes proceeded to the enemy base at Durazzo and dropped a ton of bombs. A steamer was damaged and several depôts were struck and fires were observed. The following night another party of aeroplanes proceeded to Durazzo and dropped bombs

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Training Officers for After the War.

UNDER the title of the Officers' University and Technical Training Committee, the President of the Board of Agriculture, the President of the Board of Education, the Minister of Labour and the Minister of Pensions has appointed a committee to advise these four Government Departments upon such courses of education and training as it may be desirable to arrange for the benefit of officers and ex-officers of H.M. Forces and men of like standing, particularly with a view to fitting them for suitable employment after the war; to consider any general questions arising in connection with such education and training, and when necessary to advise individual officers as to suitable courses of training.

Lieut.-Gen. Sir Alfred Keogh, G.C.B., is appointed Chairman, and G. H. V. Sutherland, Esq., of the Board of Education, and F. J. Bullen, Esq., of the Appointments Department, Ministry of Labour, are appointed Secretaries of the Committee. Among the 25 other members of the Committee, Col. R. H. More, C.M.G., represents the Air Ministry and Mr. C. B. L. Tennyson, C.M.G., the Federation of British Industries.

Gallantry During Air Raids.

At a Middlesex Police Court, on July 23rd, Special Constable George P. Bentley and Mr. Thomas Jackson were presented with a medallion and £10 in War Bonds by the Trustees of the Carnegie Hero Fund for gallant conduct during an air raid.

One a Day for a Fortnight.

FLIGHT-LIEUT. COIFFARD, a new French "Ace," has created another record, as according to the Paris newspapers he brought down his first fifteen German machines on fifteen consecutive days since the opening of the last German offensive.

Crack German Pilots Killed.

THE *Lokalanzeiger* reports the death of Flight-Lieut. Friedrichs in an aerial combat. Friedrichs, who claimed twenty-one victories, had belonged to the Richthofen squadron. Lieut. Hans Kirschstein, also a pupil of Richthofen, for whom twenty-seven victories were claimed, and who had been decorated with the Order Pour le Mérite, has also been killed.

Lieut. Helmuth Dilthey, commander of a squadron, is another who has fallen on the Western front.

American Downs Famous German.

"LIEUTENANT WALTER AVERY, of Columbus, Ohio, on his second flight over the lines, brought down a German machine," says the *Times* correspondent with the American army. "He then went over to see his capture, and found that he had brought down Capt. Mainkopf, who claims to have destroyed 15 British and French planes, and one American,

upon steamers moored in the port and upon sheds there. All our aeroplanes engaged in these two actions returned undamaged to their base in spite of intense anti-aircraft fire."

Rome, July 26th.

"A hostile aeroplane was brought down in air fighting."

Rome, July 28th.

"Two enemy aeroplanes were brought down in air fighting."

German.

Berlin, July 21st.

"Battleplanes repeatedly with machine guns and bombs took part in the successful fighting against the attacking infantry and groupings of armoured cars and columns. Yesterday we shot down 24 enemy aeroplanes and three captive balloons. Capt. Berthold gained his 39th, First Lieut. Lörzer his 28th and Lieut. Billik his 24th aerial victory."

Berlin, July 23rd.

"Fifty-two enemy aeroplanes and four captive balloons were shot down yesterday. Lieut. Loewenhardt obtained his 42nd and 43rd aerial victory, Lieut. Billik his 26th, Lieut. Bolle his 25th, and Lieut. Pippard his 20th and 21st."

Berlin, July 26th.

"In aerial combats yesterday the enemy lost 28 aeroplanes and one captive balloon. Lieut. Baron von Richthofen obtained his 30th, and with it, Richthofen's Squadron its 500th aerial victory. Lieut. Loewenhardt shot down his 44th aerial opponent, Lieut. Billik his 26th, Lieut. Bolle his 26th, and Sergt. Thom his 25th."

Bulgarian.

Sofia, July 17th.

"We captured a French aeroplane intact with its pilot, having forced him to descend behind our lines."

"East of the Vardar, after an air fight, German airmen brought down two enemy aeroplanes. A third was hit by our anti-aircraft batteries and fell in flames behind our positions near the Vardar."

Turkish.

Constantinople, July 7th.

"This morning five enemy aeroplanes attacked Constantinople with bombs. Thanks to our defensive measures not even material damage was done."

Constantinople, July 13th.

"On July 12th the flight of an air squadron towards Constantinople having been signalled, our chaser planes immediately ascended, and, after engaging the enemy, compelled him to withdraw."

Constantinople, July 24th.

"Six enemy airmen dropped bombs on Constantinople on the afternoon of July 23rd, without causing damage. Five persons were wounded."

The German was rather proud of his record until he was told that he had been brought down by an American. He quite lost his temper which he learned that his opponent was a new pilot."

The U.S. Aerial Mails.

FROM July 15th the rate of postage on aerial mail has been reduced from 24 cents to 16 cents for the first ounce, and 6 cents for each additional ounce. On June 26th a record was created, Lieut. Webb carrying 126 lbs. of mail and two passengers from New York to Philadelphia in 45 minutes. In the preceding week not a trip was missed.

The U.S. Hospital Plane.

SOME details are to hand regarding the aeroplane which is specially set apart for ambulance work at the United States military aerodrome known as Ellington Field. The machine is a Curtiss J.N. 4H., with Hispano-Suiza motor. All interior parts have been coated with white enamel, as well as the struts and landing gear, and instead of the usual insignia on the wings there are large red crosses. A gilded Caduceus is on either side of the rudder.

U.S. Prohibits Castor Bean Imports.

THE United States War Trade Board has prohibited the importation of castor oil or castor beans from the West Indies, Mexico, Central America, Columbia and Venezuela, except when the United States Government is the consignee or when the importation is approved by the Bureau of Aircraft Production. Licences for importation of castor beans and oil have been revoked as to shipments made after June 10th.

U.S. Bosch Now Liberty Magneto.

IN consequence of the order of the Comptroller-General of Customs for Australia forbidding the importation of magnetos bearing the name Bosch, it appears that the magnetos are not banned and so the American Bosch magnetos exported to Australia and New Zealand are now known as the "Liberty."

Moonlight Fight Over Italian Lines.

To an Italian aviator, whose name is temporarily withheld, belongs the credit of bringing down two enemy machines in moonlight. At 11 p.m. on July 23rd a group of Austrian bombarding planes, apparently of the Brandenburger type flew over the Italian lines for the purpose of bombarding the rear, when the Italian pilot ascended and engaged them.

He first brought down one machine, which fell to the south-east of Treviso, and both occupants, who were injured, were made prisoners. He then brought down a second, which fell in a river in the Capo Sile region, both pilot and observer being drowned.

SIDE-WINDS.

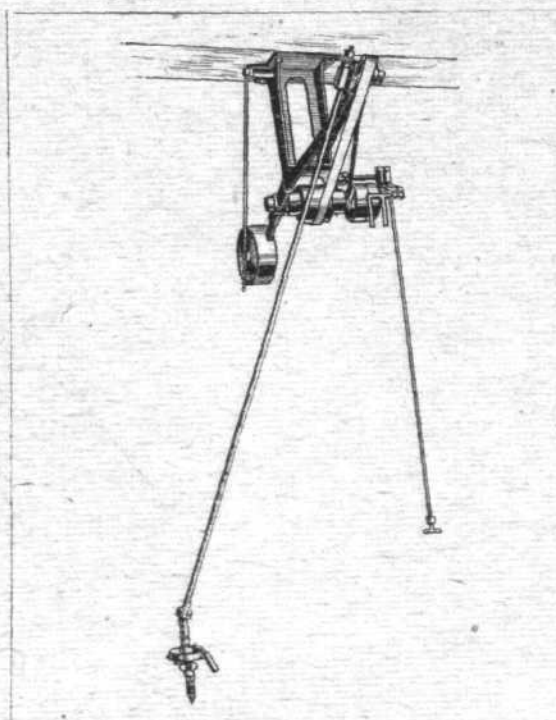
FOR the Gala and Field Day at the Grove Park Athletic Ground of the Aircraft Manufacturing Co., Ltd., the weather, which had been pretty bad during the preceding week cleared up, and the occasion was only marred by one shower lasting for about three-quarters of an hour. The proceedings commenced at 2.30 p.m. by Flat Races, intermixed with comical events, tugs-of-war and such. There was a fairly good number of competitors for these events, and this took up the time until 6 p.m. While the sports were in progress, the band of the 6th Middlesex Regiment, by permission of Major Sulman, rendered martial and other music. During the afternoon one of the A.M.C.-built machines created a diversion by a fine display of flying. After the competitions were completed, the prizes, kindly given by the Directors and Management, were presented to the lucky winners by Mrs. Holt Thomas. An *al fresco* concert then took place, followed by an open-air dance, Sergt. Sewell's orchestra supplying the music. There were several amusement stalls, &c., on the ground and everyone thoroughly enjoyed themselves. That the affair was such a brilliant success was mainly due to the strenuous work of Mr. G. Dupree and Miss Ambler, who were given every encouragement possible by Mr. and Mrs. Harvey Thomas.

A **SPLENDID** programme has been arranged by the Martinsyde Recreation Club for their sports meeting and carnival which is to be held on Saturday, August 24th, at the Woking Recreation Ground commencing at 1.30 p.m. There are nine open events, while twenty-eight closed events are suggested, so there should be no lack of sport and quite a deal of amusement, for many items have an original touch about them. Entries close on Thursday, August 15th, and forms can be obtained from Mr. S. A. Craven, c/o Martinsyde, Ltd., Woking. The Martinsyde Orchestra will render a programme of music, and there will be concerts and dancing in the evening, part of the proceeds being given to local charities. As the admission is only 1s. 3d., with some reserved seats at 2s., there should be no lack of a crowd.

FROM Messrs. Napier and Son comes a very artistic calendar for the summer months. It consists of a sketch by Hayward Young, beautifully printed on silk. As it forms a charming decoration for any office there is certain to be a demand for it, so those who would like one should lose no time in sending a line to 14, New Burlington Street, W.1.

In our issue of January 31st, when referring at some length to the ingenious screw-drilling attachment devised by Messrs. Russell Brothers, for use with drilling machines, it was stated that the firm were busy on the question of adapting the device

so that it could be taken to any part of a job. They have now satisfactorily solved the problem, and, as shown in our sketch by means of a flexible drive it is now possible to use the Russell power-screw-driver on such work as fuselages, &c. The actual screw-driving attachment remains as before;



The new flexible power-screw-driver of Messrs. Russell Brothers (Redditch).

it is simply attached to the tool holder spindle of the Overhead Flexible Boring Machine which has been specially designed for the purpose. Apart from its use with the screw-driver attachment this flexible borer is of general utility as a wood-working machine. It has been carefully thought out and is well made. Anyway, all who have charge of works where screws have to be driven into wood should make a point of getting particulars from Messrs. Russell Brothers (Redditch), Ltd., Littleworth, Redditch.

Greek Royal Train Bombed.

WHEN returning from the Italian front on the evening of July 22nd, King Alexander of Greece had a narrow escape. The Royal train being bombed by an enemy aviator at the railway station at Florina. The bomb which was dropped just missed the engine. No damage or loss of life is reported.

U.-Boat v. Seaplanes.

It is now learned that the German submarine U. 39, which took refuge at Cartagena last May in a damaged condition, was damaged as the result of being bombed by six Allied seaplanes.

Seaplane v. U.-Boat in U.S. Waters.

THE commander of the naval station at Orleans, (Mass.), reports that seaplanes attacked with bombs, the German submarine which sunk by shellfire three barges and a tug off that point on July 21st, the U-boat replying with her guns. Finally, however, she submerged. The submarine launched three torpedoes, all of which missed their targets.

German Flyers Shot by Bolshevists.

Two German airmen, named Nellesen and Burchardt, are stated to have been captured by Bolshevist troops while flying over Russian territory and to have been shot. A protest is said to have been lodged by the German Government.



The Bristol monoplane.

GAS-HEATED WORKSHOP EQUIPMENT.

It is doubtful whether the full story of our aeronautical supremacy will ever be told. The details of leadership and labour that have led up to our success in the air are so wide and varied, embracing as they do the services of so many important industries that it will be many years after the

been of vital importance in securing that perfection of constructional detail that has given us a lead over the enemy.

Another popular gas-heated apparatus is the brazing-table (Fig. 3). It will be seen by the accompanying diagram that two adjustable gas and air blast blowpipes, each fitted with

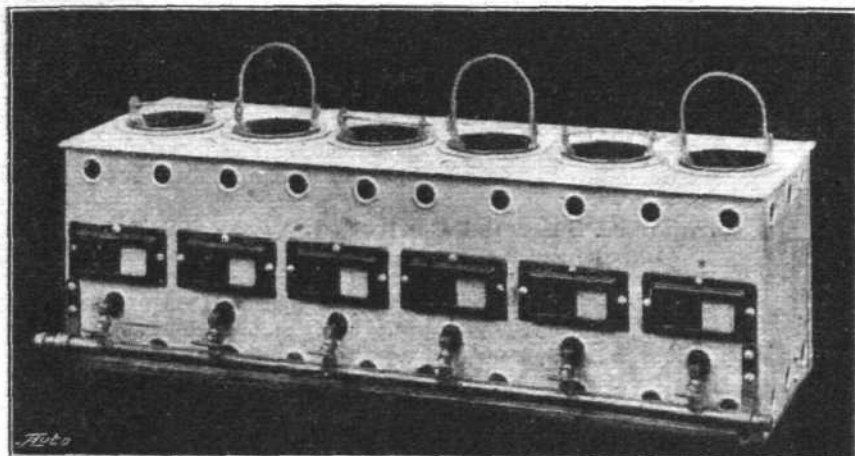


Fig. 1.—Gas-heated glue pot heater for aeronautical workshop use.

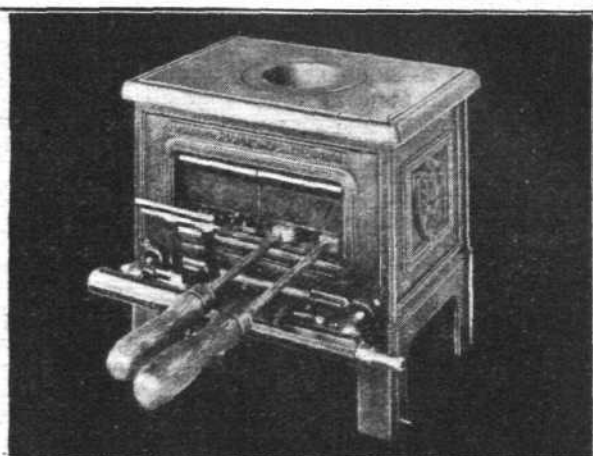


Fig. 2.—“Richmond” gas-heated soldering iron heater.

cessation of hostilities before even any attempt can be made to piece together the wonderful development of the service.

Well to the fore in all our achievements are the industries that have answered the call for a better and larger output of workshop equipment with which to make that development possible, and in this respect the gas industry has, among others, undoubtedly rendered a remarkable service to the nation.

The concrete advantages of gas-heated equipment as applied to the innumerable industrial processes requiring heat are briefly as follows:—

1. Quickly and easily installed, and operated with a minimum of labour.
2. Easy and reliable control of temperatures.
3. Compact, self-contained, mobile, choice of position practically unlimited.
4. No stoking, no fuel to be transported or stored, no ashes to be removed, much less time lost in waiting for appliance to heat up.
5. A higher percentage of efficiency is obtained by the cleaner and more healthy working conditions prevailing.
6. Fuel always available at standard calorific value.

In practically every workshop that has been specially erected or “converted” for aero work, gas will be found rendering one service or another. Apart from its general utilisation as a lighting media, gas is to-day being extensively used for the numerous and complex heat-treating propositions in connection with the manufacture of aero engines and various metal components. Of the remarkable success associated with gaseous heating for this class of work, much has already been written, and a brief description of the smaller operations performed by the aid of gas will be of interest.

A “Richmond” gas-heated glue-pot heater that has proved very successful is shown in Fig. 1. This type is made to take any number of pots of various capacity, each under separate control, and the utility of this class of equipment will be at once apparent. A solid base and extended outer casing eliminate possibility of damage to bench or surrounding work.

Gas is also used to advantage for the purpose of heating soldering irons, and here again any number of irons of any size can be heated at one time. These heaters can, of course, be placed in close proximity to the work in hand, gas connection only being necessary. In one large factory for assembling aircraft over 100 of these heaters shown in Fig. 2 have recently been installed. These embody several novel features making for higher efficiency and greater output. When the bits are placed into the stove the handle rests upon a special lever bar which automatically turns up the gas; when the bits are withdrawn the flame is reduced to a pilot light. Provision is made at the top to take a pot for melting solder or glue.

Although of a minor nature when the general construction of a complete machine is considered, it is the various functions performed by equipment such as is above described that has

flexible tube, are placed over a strong 3-inch fire-brick working table. The blowpipes are adjustable to any position for repetition work, and the numerous uses to which the aeronautical engineer can apply this type of “Richmond” equipment will at once appeal.

These are but three of the minor operations performed by gas, and we are safe in saying that practically any heat

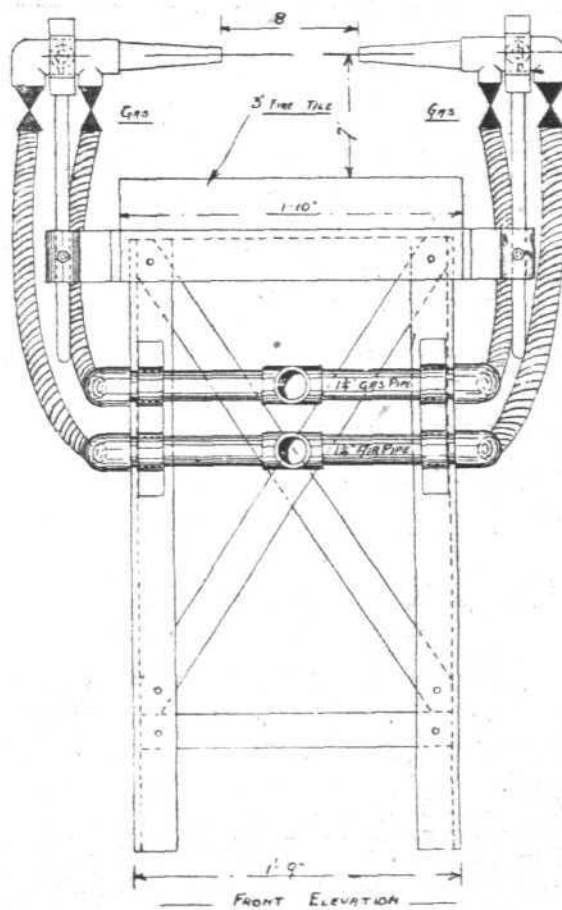


Fig. 3.—Method of adjusting gas and air blast blowpipes over brazing table.

treating proposition comes within the scope of gaseous heating, and the remarkable strides made during the past few years will amply repay the investigations of any manufacturer who uses heat.

COMPANY MATTERS.

Rolls-Royce, Ltd.

At the adjourned annual general meeting of the shareholders of Rolls-Royce, Ltd., Mr. Ernest Claremont, who presided, said it would be remembered that in March, when the annual meeting was held, a dividend was declared, but no accounts were presented. The balance-sheet was now in the hands of shareholders, and he was sure they would agree that it was very satisfactory. The capital for the period remained unaltered, but they would recollect that at the last meeting it was doubled by capitalising reserves, and this addition would appear in next year's balance-sheet.

With regard to the most important part of the balance-sheet—the profit—which was £142,056, this, with £43,115 brought forward, showed a total available of £185,172. This was the first time since the outbreak of war that they had earned profits equal to those of peace times. Since the outbreak of war the company has been working at a very great disadvantage. It could hardly be expected to make profits equal to peace times under such difficult conditions, but it had made substantial profits in increasing amounts year by year until to-day the momentum which it has gradually been creating has carried it beyond any previous figure. Until now the average of the profits during the war had been less than the highest peace time figure by 25 per cent., so that the company could take credit for having made its utmost efforts in the national interests at little advantage to itself.

The profit was ascertained after making provision for the estimated excess profits tax. While they had made an increased profit, it was, of course, by no means proportionate to the increased output. The business had been extended during the war to several times its original size, but in these times they must, of course, be content with a moderate return for their efforts, since they were entirely directed to the prosecution of the war. He wished the company could enjoy a profit proportionate to its turnover, and to which in ordinary times it would be entitled. He felt sure the company, by the marvellous reputation it has made during the war, will eventually be repaid indirectly for all it had done and for the sacrifices it has so willingly made in the national interests.

He warned shareholders that this balance-sheet did not necessarily form a sound basis for assuming profits in the future, if only because this year the company was allowed to retain certain profits to compensate it for its reduced profits during the years 1914, 1915 and 1916. Such an accrued advantage might never occur again. "We are in uncertain times, and the future is full of possibilities for and against us," added the chairman. He mentioned incidentally that Mr. Basil Johnson, a member of the staff, had recently been promoted to the position of general manager, and to prevent confusion the title of Mr. Claud Johnson, the general managing director, had, without detracting from his authority in any way, been altered to managing director.

The directors' report and balance-sheet, on the motion of the chairman, were unanimously adopted.

The meeting was then declared to be an extraordinary one for the purpose of considering certain alterations to the articles of association, and these were unanimously approved.

Vickers, Ltd.

The directors of Vickers, Ltd., have declared the following interim dividends for the half-year ended June 30th, payable August 29th to holders of record August 14th:—2½ per cent., less tax, on the preferred 5 per cent. stock and 5 per cent. preference shares; 1s. per share, free of tax up to 5s. in the £, on the ordinary shares.

NEW COMPANIES REGISTERED.

HENRY J. BREWSTER AND CO., LTD., 11, Queen Victoria Street, E.C.—Capital £15,000 in £1 shares (10,000 7 per cent. preference). Business of engineers, machine tool makers, carried on by H. J. Brewster, as "Henry J. Brewster and Co.," also to carry on the business of aircraft and component manufacturers, &c. First directors: H. J. Brewster and E. V. Horsham.

ENGINEERING PROPRIETARY, LTD., 97, New Bond Street, W.1.—Capital £100, in £1 shares. Manufacturers of aircraft and component parts thereof, &c.

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Aeronautical Patents Published.

Abbreviations:—cyl. = cylinder; I.C. = internal combustion; m. = motors.

Applied for in 1915.

Published August 1st, 1918.

16,821. F. H. PAGE. Covering-fabric of aeroplanes.

Applied for in 1916.

The numbers in brackets are those under which the specifications will be printed and abridged, &c.

Published August 1st, 1918.

15,881. A. BEURRIER, E. BIGOURDAN and L. LACON. Flying machines with revolving wings. (102,134.)

Applied for in 1917.

The numbers in brackets are those under which the specifications will be printed and abridged, &c.

Published August 1st, 1918.

4,126. E. R. CATHROP. Parachutes. (117,092.)
6,070. T. M. DOWN. Aeronautical sighting and range-finding device for use in bomb dropping. (117,096.)
9,507. E. W. BOWEN. Landing-gear for aircraft. (117,115.)
12,613. F. A. HERBERT and BAXTER and CAUNTER. Propeller-shaping machine. (117,175.)
16,387. S. D. MOTT. Air propeller. (117,202.)

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